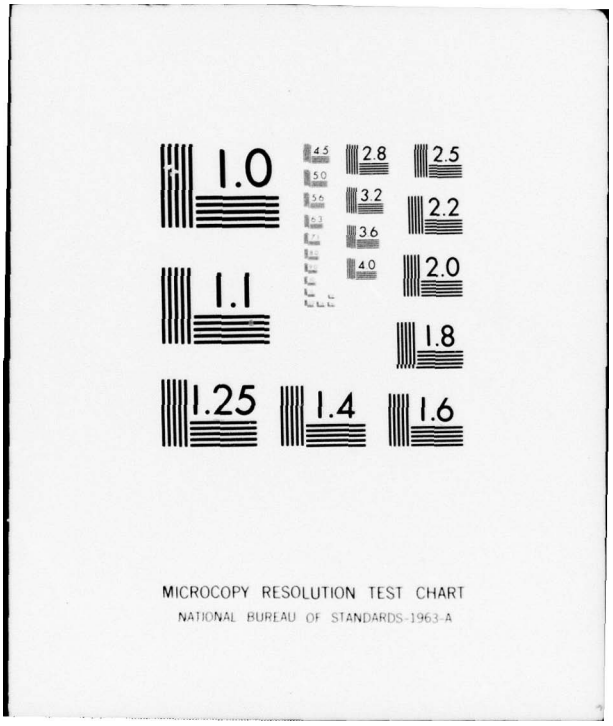
AD-A040 017 AIR FORCE OCCUPATIONAL MEASUREMENT CENTER LACKLAND A--ETC F/G 5/9
COMPUTER SYSTEMS CAREER FIELD, AFSCS 511X0/A/B/C, 511X1/A/B/C, --ETC(U)
MAR 77

UNCLASSIFIED AFPT-90-511-249 NL

1 OF 1
AD A040017

END
DATE FILMED
6-77


1.0
1.1
1.25
1.4
1.6
1.8
2.0
2.2
2.5
2.8
3.2
3.6
4.0
4.5
5.0
5.6
MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS-1963-A

OCCUPATIONAL SURVEY REPORT.

31 March 77

78 p.

COMPUTER SYSTEMS CAREER FIELD

AFSCs 511X0/A/B/C; 511X1/A/B/C;
51132/72; AND 51192

AFPT-90-511-249, 90-511-250, ~~AND 90-511-251~~

AFPT-

31 MARCH 1977

OCCUPATIONAL SURVEY BRANCH
USAF OCCUPATIONAL MEASUREMENT CENTER
LACKLAND AFB TEXAS 78236

APPROVED FOR PUBLIC RELEASE; DISTRIBUTION UNLIMITED

408 897

TABLE OF CONTENTS

PREFACE

This report presents the results of a detailed Air Force Occupational Survey of the Computer Systems career field, (AFSCs 51130,A,B,C; 51150,A,B,C; 51170; 51131,A,B,C; 51151,A,B,C; 51171; 51132; 51172; 51192). The project was directed by USAF Program Technical Training, Volume 2, dated July 1975. Authority for conducting specialty surveys is contained in AFR 35-2. Computer outputs from which this report was produced are available for use by operating and training officials.

The survey instrument was developed by Capt Hynson H. Marvel, 1st Lt David S. Street, and Capt James N. Eustis, Inventory Development Specialists. Mr. James B. Keeth analyzed the survey data and wrote the final report. This report has been reviewed and approved by Major Thomas J. O'Connor, Chief, Operations/Support Career Ladders Analysis Section, Occupational Survey Branch, USAF Occupational Measurement Center, Lackland AFB, Texas, 78236.

Computer programs for analyzing the occupational data were designed by Dr. Raymond E. Christal, Occupational and Manpower Research Division, Air Force Human Resources Laboratory (AFHRL), and were written by the Project Analysis and Programming Branch, Computational Sciences Division, AFHRL.

Because volume reproduction of this report is not feasible, distribution is made on a loan basis to air staff sections and major commands upon request to the USAF Occupational Measurement Center, attention of the Chief, Occupational Survey Branch (OMY), Lackland AFB, Texas 78236.

This report has been reviewed and is approved.

JAMES A. TURNER, JR., Colonel, USAF
Commander
USAF Occupational Measurement Center

WALTER E. DRISKILL, Ph.D.
Chief, Occupational Survey Branch
USAF Occupational Measurement Center

SUMMARY OF RESULTS

1. Survey Coverage: Survey results are based on responses from 38 percent of the assigned personnel holding DAFSC 511X0/A/B/C, 35 percent of those holding DAFSC 511X1/A/B/C, 38 percent of DAFSC 51132/72 personnel, and 68 percent of DAFSC 51192 personnel. This represents 39 percent of the total computer systems career field (511XX) population.

2. Career Ladder Structure: Eleven groups were identified within the computer systems career field. These were:

I. Computer Operator Specialists,
II. Data Processing and Accounting Machine Operators,
III. Supervisory Personnel,
IV. Computer Performance Evaluation/Management Personnel,
V. Training Personnel,
VI. Production Control Personnel,
VII. Programming Specialists,
VIII. System Analysts and Programming Specialists,
IX. General Programming Specialists,
X. System Analysts and Evaluators, and
XI. Data Automation Systems Technicians.

3. DAFSC Differences: Computer operators (AFSC 511X0) spent most of their time operating data processing equipment and performing production control tasks. As skill level increased, a trend towards more supervisory functions was noted. Computer programmers (AFSC 511X1), however, reflected more consistent time spent figures at the 5- and 7-skill levels. That is, most of their time was spent developing and maintaining automated data systems, with supervisory tasks not increasing noticeably at the 7-skill level.

The job of the system analyst (AFSC 51132/72) was found to be far more diverse than that of the computer operator or programmer. It was found that the duties and responsibilities of this AFSC did not have clearly defined limits within the overall career field structure, with some overlap in task performance being noted between the system analyst and programmer DAFSC groups.

4. Possible Restructuring of the Career Field: While the survey data tended to reflect that the present structure of the computer operator career ladder (AFSC 511X0) is functioning according to the AFM 39-1 job descriptions, the present structure of the programmer and system analyst AFSCs were found to warrant review by command and classification personnel. Shredding the programmer AFS by computer systems at the 3- and 5-skill levels may not be the optimum structure for this ladder. Dropping the shreds

altogether or shredding by application setting appear to be very viable alternatives. Also, a separate ladder for system analysts was not found to be entirely appropriate, with a more logical and feasible alternative being to merge their functions into the tasks and responsibilities of the 7-skill level programmer.

5. AFM 39-1 Evaluation: All job descriptions were found to warrant some amount of revision, since some important functional areas were not covered in sufficient detail and many of the task responsibilities listed under each duty paragraph were somewhat outdated. Proposed revisions are reflected in Appendix B.

6. STS Evaluation: With a few exceptions, the 511X0 and 511X1 STSs were found to reflect the survey data. However, those paragraphs covering management of data processing activities (for STSs 511X0, 511X0A, 511X0B, and 511X0C) and supervision (for STSs 511X1, 511X1A, 511X1B, and 511X1C) were found to be somewhat inappropriate at the 3- and 5-skill levels.

7. Job Satisfaction: Job interest for all three AFSCs surveyed was high, with 71 percent of the computer operators, 78 percent of the computer programmers, and 66 percent of the systems analysts finding their jobs interesting. In addition, most incumbents felt that their talents and training were being utilized fairly well to perfectly.

8. Comparison of Current Survey To 1973 Study: No major differences were found between the results of this survey and the occupational survey made of this career field in 1973. Both surveys showed high job satisfaction and similar career ladder structure groups. In addition, task performance of the skill level groups appeared to have changed very little over time.

OCCUPATIONAL SURVEY REPORT
COMPUTER SYSTEMS CAREER FIELD
AFSCs 511X0/A/B/C; 511X1/A/B/C; 511X2

INTRODUCTION

This is a report of an occupational survey of the computer systems career field conducted by the Occupational Survey Branch, USAF Occupational Measurement Center, from September 1975 through March 1977. The previous occupational survey of this career field was completed during March 1973.

Since October 1971, the computer systems career field has been comprised of three separate career ladders: Computer Operator (AFSC 511X0), Computer Programming Specialist (AFSC 511X1), and Computer Systems Analysis and Design Technician (AFSC 511X2). This present structure replaced the old four-ladder 68XXX career field structure. Shredouts for the 3- and 5-skill level operator and programmer AFSCs were added in October 1974 to facilitate technical training and assignment of personnel. Figure 1 shows the career field chart as given in AFM 39-1, Airman Classification Manual.

Comments from career field members in the using commands have indicated that the current structure should again be reviewed in light of the 1974 classification changes and new skills and programs which have come into existence since the 1973 survey was completed. These skills and programs include data base administration, job control language (but no programming) environments, and top-down structured programming. In particular, questions have been raised as to the feasibility of continuing to shred the 3- and 5-skill levels of the programmer AFSC by equipment and the proper role of the computer system analysis and design technician (51172) AFSC within the overall career field structure.

INVENTORY DEVELOPMENT AND ADMINISTRATION

The data collection instrument for this occupational survey was USAF job inventory AFPT 90-511-249, 90-511-250, and 90-511-251. Thorough research of career field publications and directives, personal interviews with 32 subject matter specialists at 12 bases, and written reviews from 147 experienced computer systems personnel in the three career ladders involved led to final development of the survey instrument, which consists of 405 task statements grouped under eight duty headings.

During the period August 1976 through November 1976, consolidated base personnel offices in operational units worldwide administered the inventory booklets to job incumbents holding the DAFSCs identified above. Care was taken to insure that all skills, activities, computer systems, and commands were adequately represented in this sampling of the career field.

FIGURE 1

CURRENT AFM 39-1 COMPUTER SYSTEMS CAREER FIELD CHART

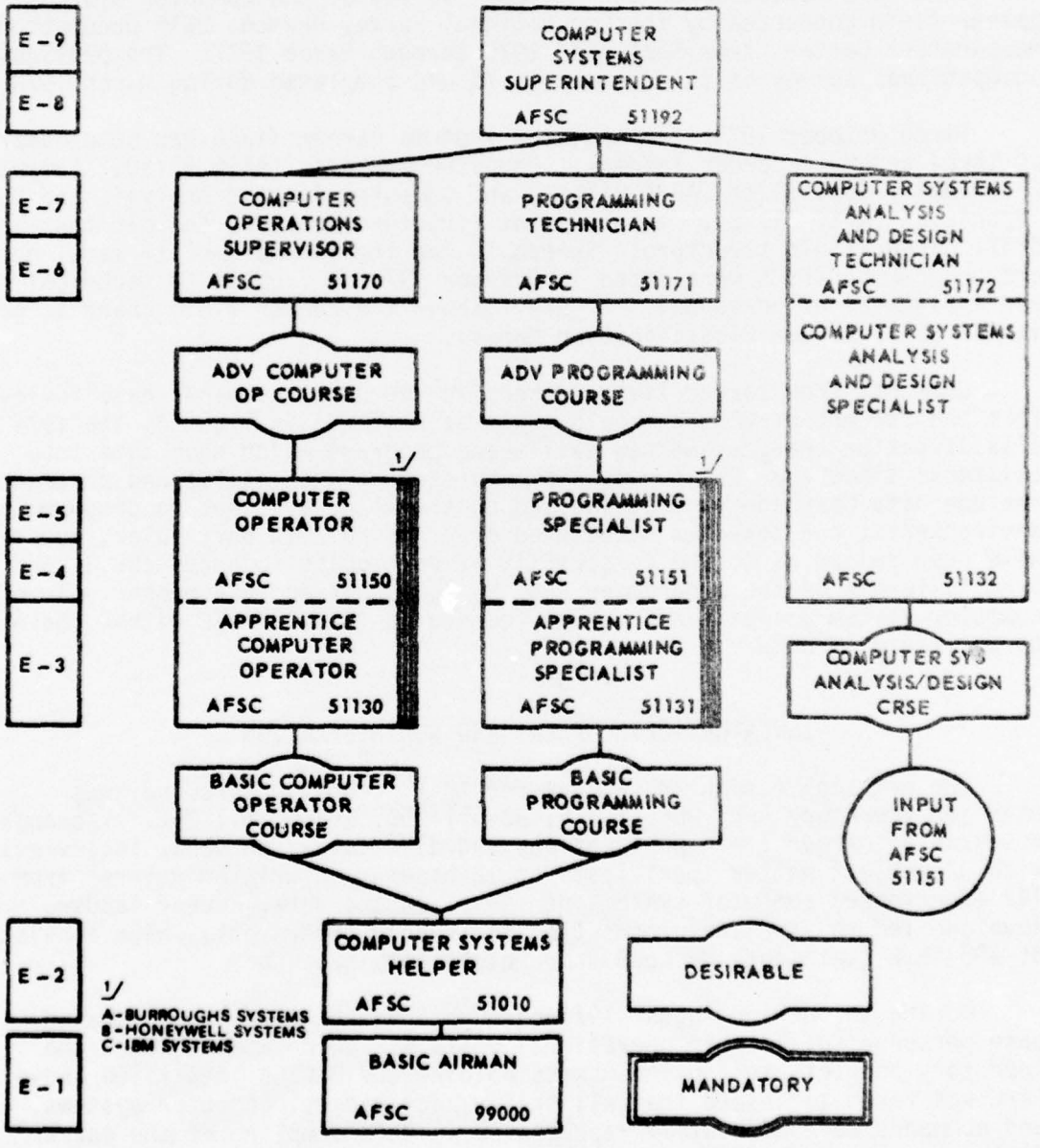


Table 1 reflects the percentage distribution, by major command, of assigned personnel in the career field as of November 1976. Also reflected is the distribution by major command of incumbents in each career ladder surveyed. The sample of 2,346 incumbents represents 38 percent of all 511XO/A/B/C personnel, 35 percent of all 511X1/A/B/C personnel, 38 percent of all 51132/72 personnel, and 68 percent of all 51192 personnel, or 39 percent of the total career field population. This sampling of career field members is considered to be an adequate and representative sample of the Computer Systems career field population.

TABLE 1

COMMAND REPRESENTATION OF SURVEY SAMPLE

COMMAND OR AGENCY	511X0		511X1		51132/72		51192	
	PERCENT OF ASSIGNED	PERCENT OF SAMPLE	PERCENT OF ASSIGNED	PERCENT OF SAMPLE	PERCENT OF ASSIGNED	PERCENT OF SAMPLE	PERCENT OF ASSIGNED	PERCENT OF SAMPLE
SAC	21	23	14	13	19	26	9	15
MAC	16	16	6	7	1	-	8	10
TAC	9	9	12	13	8	5	7	8
AFSC	9	9	9	9	6	9	4	6
ADC	8	8	9	8	4	5	9	8
ATC	7	7	5	6	4	2	7	6
USAFE	7	5	5	3	8	3	7	4
DAA	4	*	16	*	23	*	25	*
PACAF	4	3	4	3			5	5
USAFSS	4	3	3	4	1	-	3	4
ELM	3	*	3	*	6	*	6	*
MPC	3	*	5	*	3	*	4	*
AFSC	1	1	3	3	6	2	1	1
AU	1	1	2	2	2	5		
AFLC	1	1	2	3	1	2	2	1
AFA	1	1			3	2		
OTHER	1	13**	2	26**	5	39**	3	32**

SAMPLE N = 2,346

* Information not available, coded as "OTHER" in survey booklet

** Includes figures for those agencies indicated by * above

CAREER FIELD STRUCTURE

The job structure of the Computer Systems career field was examined on the basis of similarity in the tasks performed by incumbents in the field, independent of DAFSC or other background factors. The computer printouts used in this part of the analysis helped identify: (1) tasks which tend to be performed by the same incumbents; (2) the breadth or narrowness of jobs performed in the field; and (3) tasks and background characteristics used in distinguishing among different jobs within the career field. Structure analysis therefore provided an objective indication of the amount of task overlap among the various groups of incumbents included in the survey sample.

Based on task similarity, the best division of the jobs performed in the Computer Systems career field is illustrated in Figure 2. These jobs are identified below. The GRP Numbers shown with each job is a reference to computer printed information included for use by classification and training officials.

I. Computer Operator Specialists (GRP116, N=893)

II. Data Processing and Accounting Machine Operators (GRP434, N=8)

III. Supervisory Personnel (GRP068, N=311)

- a. NCOIC, Data Automation and NCOIC, Computer Operations (GRP286)
- b. NCOIC, Computer Operations and Shift Supervisors(GRP232)
- c. NCOIC, Production Control (GRP185)

IV. Computer Performance Evaluation/Management Personnel (GRP075, N=67)

- a. Base Level Data Management Technicians (GRP404)
- b. Equipment Management Technicians (GRP312)
- c. Evaluation and Assistance Team Members (GRP473)

V. Training Personnel (GRP095, N=29)

VI. Production Control Personnel (GRP026, N=299)

- a. System Monitors (GRP033)
- b. Tape Librarians (GRP059)
- c. Production Control Clerks (GRP088)

VII. Programming Specialists (GRP094, N=439)

VIII. System Analysts and Programming Specialists (GRP106, N=30)

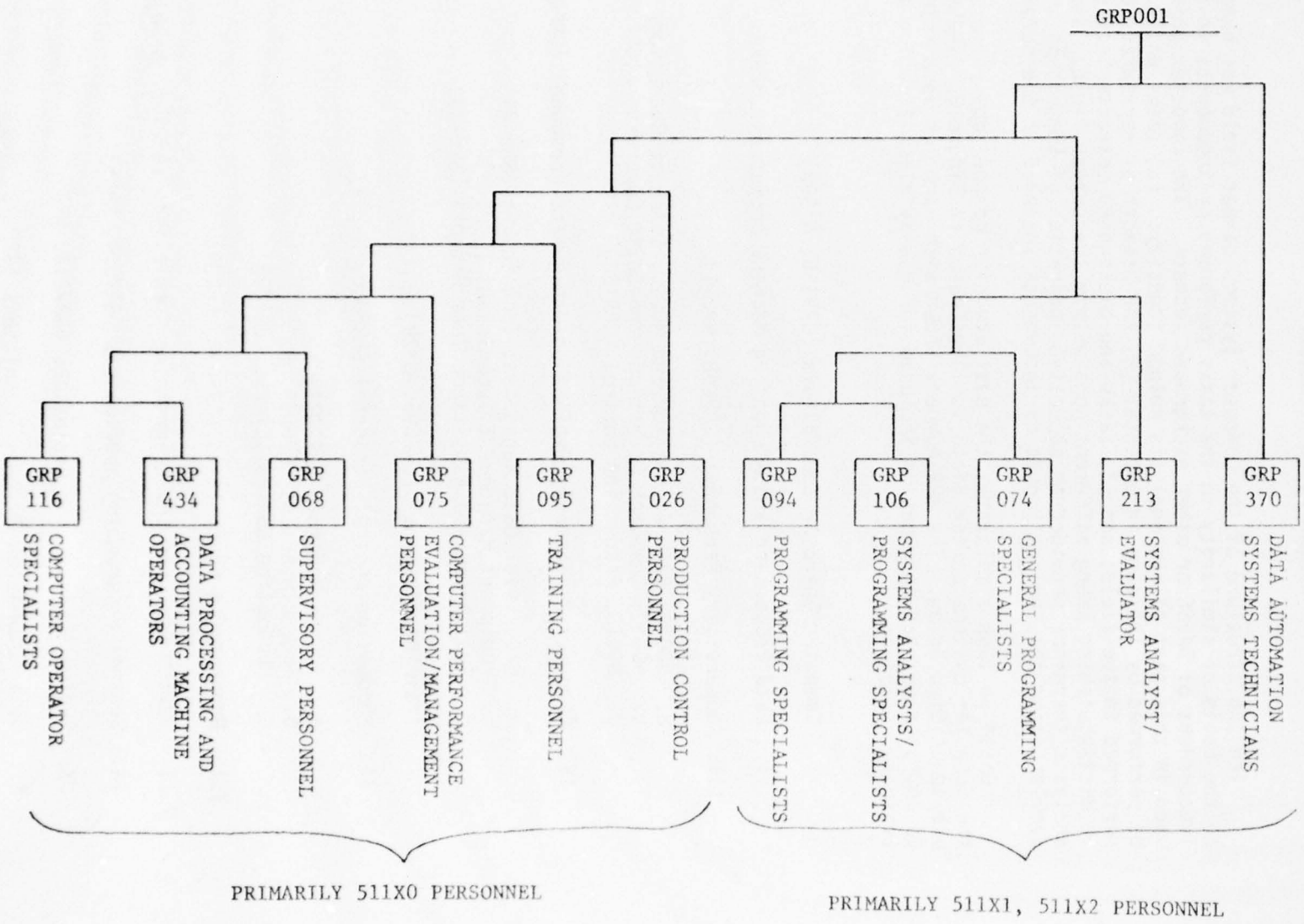
IX. General Programming Specialists (GRP074, N=66)

X. System Analysts and Evaluators (GRP213, N=7)

XI. Data Automation Systems Technicians (GRP370, N=8)

FIGURE 2

COMPUTER SYSTEMS CAREER FIELD STRUCTURE, AFS 511XX



GROUP DESCRIPTIONS

Brief descriptions of the major groups which encompass the important functions of the Computer Systems career field are given below. Complete summaries of representative tasks and background information for each group can be found in Appendix A.

I. Computer Operator Specialists. These 893 incumbents spend approximately 84 percent of their time in one duty area - operating data processing equipment. All hold the 511X0 AFSC, with the largest concentration holding the 5-skill level. In general, these incumbents were found to group primarily on the basis of computers operated, type of activity assigned, and level of organization which they support. Generally, little difference was found in the task performance within the computer operator group, with incumbents primarily involved with such tasks as selecting, mounting, or dismounting tapes; operating consoles; changing or aligning paper in printers; and operating line printers, card readers, and card punches.

II. Data Processing and Accounting Machine Operators. These eight members are primarily 511X0C incumbents at overseas locations who spend much of their time operating accounting machines such as the IBM 407, card sorters, card punches, card reproducers, and interpreters. In addition, they spend some time doing supervisory functions and on-the-job training (OJT). Five of the eight members (63 percent) find the job dull or so-so, and seven of the eight members (88 percent) indicate that the job utilizes their talents and training very little.

III. Supervisory Personnel. These 311 incumbents spend 48 percent of their time performing essentially supervisory functions such as directing and implementing, organizing and planning, and inspecting and evaluating. Eighty-four percent hold a 51170 or 51192 AFSC and are responsible for supervising a computer operations activity. Most of the members refer to themselves as either NCOIC, Computer Operations; NCOIC, Data Automation; or as shift supervisors. Three basic groups of supervisory personnel were identified in the analysis process (GRP286, GRP232, and GRP185). The primary differences found between these groups were the amount of technical functions performed.

IV. Computer Performance Evaluation/Management Personnel. These 67 incumbents are primarily involved in the areas of data management, equipment management, or evaluation and assistance functions. The largest portion of their time is spent evaluating the performance and utilization of computers, or evaluating computer operations activities. Seventy-seven percent of the members hold the 511X0 AFSC.

Three basic jobs were identified within this group. Base level data management technicians (GRP404) and equipment management technicians (GRP312) both spend much of their job time reviewing maintenance records, utilization logs, and management reports for effective equipment utilization. In

addition, the equipment management technicians perform tasks involved with equipment acquisition, installation, or replacement. Evaluation and assistance team members (GRP473), on the other hand, are primarily involved with making periodic evaluation and assistance visits to computer activities to determine the overall effectiveness of the data processing program in terms of manpower, personnel, and training.

V. Training Personnel. These 29 incumbents are primarily involved in training functions. Seventy-two percent are assigned to ATC as technical school instructors, with the remainder being assigned to various commands as training NCO's. Sixty-six percent hold the 511X0 AFSC, with 24 percent holding the 511X1 AFSC.

VI. Production Control Personnel. These 299 incumbents are involved primarily with production control functions and operating data processing equipment. Eighty-six percent hold the 511X0 AFSC, with the largest portion having a 5-skill level.

Basically, three very distinct jobs are identified within this group--systems monitors, tape librarians, and production control clerks. System monitors interact with Offices of Primary Responsibility (OPRs) on coordinating processing schedules and new or revised reporting requirements, inform them of repeated input or output errors, and schedule programs and runs.

Tape librarians are involved with the care and storage of tapes or disc packs in the tape library. However, it is interesting to note that 48 percent of these 67 members described their job as "dull" or so-so," with 58 percent expressing the opinion that the job utilizes their training very little or not at all.

The production control clerks also expressed high dissatisfaction with their job, with 71 percent of these 31 incumbents finding the job "dull" or "so-so," and over 70 percent indicating that their talents and training are being utilized very little or not at all. Basically, these incumbents are lower grade airmen (average grade 3.6) who perform relatively few tasks. They primarily operate data processing equipment such as decollators, interpreters, and bursters; deliver computer products to OPR's; and review sign in/sign out logs.

VII. Programming Specialists. These 439 members spent 75 percent of their time developing and maintaining automated data systems. The primary difference between these incumbents and the general programmers (GRP074) is that the job performed by these incumbents involves more than general programming tasks. The programming specialist is highly involved with flow charting, designing record and report formats, testing programs, and writing or updating documentation for programs. In other words, these members spend most of their time updating operational programs or developing new programs.

VIII. System Analysts and Programming Specialists. These 30 members are also involved with programming functions, but a larger portion of their job is

spent with systems programming. Forty percent of this group have the 511X1 AFSC, while 27 percent carry the 51172 AFSC. These members are involved with evaluating program or system development, identifying data base requirements, coordinating systems interface or integration requirements with appropriate agencies, and defining detailed system processes such as processing sequences, edits, or utility routines. Less time is spent on flow charting, testing of new programs, or desk checking program logic. Most are senior NCO's, with an average paygrade of 6.7.

IX. General Programming Specialists. These 66 incumbents spend 87 percent of their time developing and maintaining automated data systems. Most of their time is spent performing a small number of general programming tasks such as desk checking programming logic, coding cobol routines, isolating and correcting program logic errors, desk checking program desk for keypunching errors, and isolating and correcting syntax errors.

X. System Analysts and Evaluators. These seven incumbents are primarily 7-skill level members with either the 51170, 51171, or 51172 AFSC. Over half are assigned to the Air Force Data Systems Design Center. They are primarily involved with performing analyses of output products for compliance with standards and specifications; reviewing or editing program operation or operations manuals; evaluating proposed system designs, programs, or systems development; and testing new operating systems or programs.

XI. Data Automation Systems Technicians. This small group of eight incumbents primarily hold the 51171, 51172, and 51192 AFSC. Most are assigned to the Air Force Data Systems Design Center. The largest portion of their time is spent preparing, reviewing, and coordinating data automation requirements (DARs), data project plans (DPPs), and data project directives (DPDs).

ANALYSIS OF DAFSC GROUPS

Tables 2 and 3 reflect the relative percent time spent by members of the various skill level groups on tasks within each duty. Significant trends for each ladder are discussed below.

COMPUTER OPERATORS (AFSC 511X0)

At the 3-skill level, computer operators spend more than 80 percent of their time operating data processing equipment. They are primarily performing such tasks as selecting, mounting, or dismounting tapes; changing or aligning paper in printers; operating line printers, card readers, consoles, card sorters, and interpreters; and completing Automatic Data Processing Equipment (ADPE) Tape Identification forms (AF Form 606) or making entries in ADPE Daily Utilization logs (AF Form 599).

At the 5-skill level, incumbents spend approximately 60-70 percent of their time operating data processing equipment, with production control tasks now consuming an additional 14-22 percent of the time. Generally less than 10 percent of the time is spent on supervisory duties. In addition to performing those tasks listed above for 3-skill level incumbents, 5-skill level incumbents are involved with performing shift turnover procedures, adjusting sequence of runs during shift for effective machine utilization, informing CPR of repeated input data errors, and demonstrating how to operate equipment.

At the 7-skill level, operation of data processing equipment drops to 34 percent of the total job time and production control tasks drop to 13 percent. However, time spent on supervisory duties jumps from less than 10 percent at the 5-skill level to 41 percent. While technical tasks are still being performed by 7-skill level incumbents, they now spend most of their time on such tasks as reviewing ADPE Maintenance Records (AF Form 597); conducting on-the-job training (OJT); counseling personnel on personal or military related problems; interpreting policies, directives, or procedures for subordinates; inspecting work areas; and coordinating repair of ADPE with maintenance personnel.

COMPUTER PROGRAMMERS (AFSC 511X1)

Computer programmers tend to reflect more consistent time spent figures at the 5- and 7-skill levels than computer operators. All skill level groups, except 5-skill levels with the C-shredout, spend approximately 66 percent of their time developing and maintaining automated data systems. The C-shredout incumbents spend 80 percent of their time on this function. Common tasks performed by 50 percent or more of all incumbents are listed in Table 4. It should be noted that the 11 tasks listed in the table are the most time-consumming tasks for <u>both</u> 5-skill and 7-skill level groups.

Unlike most other 7-skill level groups, supervisory tasks do not appear to be a critical function of the 7-skill level programmer. In fact, the time spent by 7-skill level respondents on supervisory duties accounts for only 17 percent of the total job time, as compared to 41 percent for computer operators. Thus, it appears that programming incumbents do not necessarily pick up the customary supervisory duties and responsibilities as skill level increases.

SYSTEM ANALYSTS (DAFSC 51132/72)

As with the computer programmers, these incumbents spend the largest percent of their total job time developing and maintaining automated data systems (47 percent). However, the task performance of these incumbents is somewhat different from that of the programmers. System analysts are more involved with evaluating programs or systems development, designing report formats, coordinating development specifications with appropriate agencies, and performing analyses of output products for compliance with standards. An additional 25 percent of their time is spent on supervisory duties. Table 5 lists those tasks which are performed by 35 percent or more of all 51132/72 personnel.

It should be noted that the percent of 51132/72 incumbents performing any given task is considerably less than that found for the other computer groups. This tends to indicate that the job of the systems analyst is far more diverse than that of the computer operator or programmer. Thus, the survey data tend to indicate that the duties and responsibilities of this AFSC do not have clearly defined limits within the overall career field structure.

Comparisons between the task performance of the system analysts and the programmers were also made. It was found that some overlap in task performance did exist between the programmer and system analyst groups. Table 6 lists those tasks which were performed by more than 25 percent of the members in both groups. In addition, Table 7 reflects those tasks which best distinguish between these two AFSC groups. In general, all tasks being performed by programming personnel are also being performed by system analysts. The major difference evolves around what level each group is involved (i.e. monolithic programming vs systems programming).

COMPUTER SYSTEMS SUPERINTENDENT

At the 9-skill level, supervisory duties consume 53 percent of the total job time, with an additional 27 percent being spent developing and maintaining automated data systems. Most of these incumbents are computer operations supervisors or data automation supervisors. They primarily perform such tasks as directing administrative functions, drafting office instructions or computer operating procedures, initiating personnel actions, conducting orientation briefings of newly-assigned personnel, assigning personnel to duty positions, and planning or scheduling work assignments or shifts.

TABLE 2

PERCENT TIME SPENT ON DUTIES BY 511X0 DAFSC GROUPS

DUTIES	TOTAL 511X0	DAFSC 51130	DAFSC 51130A	DAFSC 51130B	DAFSC 51130C	DAFSC 51150	DAFSC 51150A	DAFSC 51150B	DAFSC 51150C	DAFSC 51170
A ORGANIZING AND PLANNING	4	-	1	-	-	2	2	1	1	9
B DIRECTING AND IMPLEMENTING	6	-	1	2	-	3	3	3	3	14
C INSPECTING AND EVALUATING	4	1	1	1	-	2	2	2	1	9
D TRAINING	5	-	-	-	1	4	3	3	4	9
E PERFORMING DATA MANAGEMENT FUNCTIONS	3	1	1	1	-	1	2	1	1	7
F PERFORMING PRODUCTION CONTROL FUNCTIONS	17	12	12	13	12	11	22	16	18	13
G OPERATING DATA PROCESSING EQUIPMENT	60	83	83	81	84	69	64	72	71	34
H DEVELOPING AND MAINTAINING AUTOMATED DATA SYSTEMS	3	2	1	2	3	4	2	2	1	4

TABLE 3

PERCENT TIME SPENT ON DUTIES BY 511X1 AND 511X2 DAFSC GROUPS*

DUTIES	TOTAL 511X1	DAFSC 51151	DAFSC 51151A	DAFSC 51151B	DAFSC 51151C	DAFSC 51171	TOTAL 51132/51172	DAFSC 51132	DAFSC 51172	DAFSC 51192
A ORGANIZING AND PLANNING	3	2	3	1	1	5	8	8	8	15
B DIRECTING AND IMPLEMENTING	4	2	2	1	3	5	9	10	9	18
C INSPECTING AND EVALUATING	2	1	1	1	2	3	5	5	5	13
D TRAINING	3	3	1	2	1	4	3	2	3	7
E PERFORMING DATA MANAGEMENT FUNCTIONS	2	2	2	1	1	2	4	2	5	6
F PERFORMING PRODUCTION CONTROL FUNCTIONS	9	8	14	12	6	7	10	8	10	6
G OPERATING DATA PROCESSING EQUIPMENT	12	18	10	15	6	9	14	12	14	8
H DEVELOPING AND MAINTAINING AUTOMATED DATA SYSTEMS	66	64	68	67	80	65	47	53	46	27

* 51131,A,B,C groups not reported due to the small number of respondents in the shredout groups

TABLE 4

TASKS PERFORMED BY 50% OR MORE OF ALL 511X1 PERSONNEL
(ALL SHREDS INCLUDED)

	TASK	PERCENT MEMBERS PERFORMING
H34	DESK CHECK PROGRAMMING LOGIC	84
H65	ISOLATE AND CORRECT PROGRAM LOGIC ERRORS	77
H66	ISOLATE AND CORRECT SYNTAX ERRORS	74
H33	DESK CHECK PROGRAM DECK FOR KEYPUNCHING ERRORS	72
H4	CODE COBOL ROUTINES	65
H122	REVIEW COMPILATION OR ASSEMBLY OUTPUTS FOR ERRORS	64
H118	READ COMPUTER DUMPS FOR PROGRAM BUGS	61
H9	CONDUCT OPERATIONAL FIELD TESTS OF NEW OR REVISED PROGRAMS	55
H144	WRITE OR UPDATE DOCUMENTATION FOR PROGRAMS	51
H113	PREPARE SYSTEM OR PROGRAM TEST DATA	51
H84	PREPARE CHANGES TO CORRECT ERRORS OR IMPROVE OPERATIONAL PROGRAMS	50

TABLE 5

TASKS PERFORMED BY 35% OR MORE OF ALL 51132/51172 PERSONNEL

	TASK	PERCENT MEMBERS PERFORMING
B11	DRAFT CORRESPONDENCE	62
A2	CONDUCT OR PARTICIPATE IN STAFF MEETINGS	48
A5	DRAFT OFFICE INSTRUCTIONS OR COMPUTER OPERATING INSTRUCTIONS	47
F28	PREPARE CONTROL CARDS OR JOB EXECUTION CARDS	45
H57	IDENTIFY FILES OR RECORDS REQUIREMENTS	41
H32	DESIGN REPORT FORMATS	40
H70	PERFORM ANALYSES OF OUTPUT PRODUCT FOR COMPLIANCE WITH SPECIFICATIONS	40
H34	DESK CHECK PROGRAMMING LOGIC	40
C13	EVALUATE PROGRAMS OR SYSTEMS DEVELOPMENT	38
H16	COORDINATE DEVELOPMENT SPECIFICATIONS WITH APPROPRIATE AGENCIES	38
H71	PERFORM ANALYSES OF OUTPUT PRODUCT FOR COMPLIANCE WITH STANDARDS	36
B15	INTERPRET POLICIES, DIRECTIVES, OR PROCEDURES FOR SUBORDINATES	36
H31	DESIGN RECORD FORMATS	36
H33	DESK CHECK PROGRAM DECK FOR KEYPUNCHING ERRORS	36

TABLE 6

TASKS PERFORMED BY 25 PERCENT OF THE INCUMBENTS
IN BOTH THE 511X1 AND 511X2 CAREER LADDERS
(PERCENT MEMBERS PERFORMING)

TASK		DAFSC 511X1	DAFSC 511X2
F28	PREPARE CONTROL CARDS OR JOB EXECUTION CARDS	48	45
G13	LOAD PROGRAMS, FILES, OR DATA BASE	28	28
G22	OPERATE CARD PUNCHES	31	33
G26	OPERATE CATHODE RAY TUBE SYSTEMS	29	26
H4	CODE COBOL ROUTINES	65	31
H8	CONDUCT FINAL SYSTEM REVIEWS FOR USER APPROVAL	29	26
H9	CONDUCT OPERATIONAL FIELD TESTS OF NEW OR REVISED PROGRAMS	55	31
H10	CONDUCT OR ATTEND DESIGN ANALYSIS TEAM MEETINGS	28	33
H22	DEFINE DETAILED SYSTEM PROCESSES SUCH AS PROCESSING SEQUENCES, EDITS, OR UTILITY ROUTINES	31	28
H25	DESIGN DATA ELEMENTS OR CODES	26	28
H31	DESIGN RECORD FORMATS	47	36
H32	DESIGN REPORT FORMATS	49	40
H33	DESK CHECK PROGRAM DECK FOR KEYPUNCHING ERRORS	72	36
H34	DESK CHECK PROGRAMMING LOGIC	84	40
H38	DEVELOP DOCUMENT FLOW CHARTS OF SYSTEMS	41	31
H39	DEVELOP GENERAL FLOW CHARTS OF SYSTEM OPERATIONS	40	33
H57	IDENTIFY FILES OR RECORDS REQUIREMENTS	32	41
H58	IDENTIFY INPUT OR OUTPUT CHARACTERISTICS SUCH AS MODE, MEDIA, VOLUME, OR CODING	33	33
H65	ISOLATE AND CORRECT PROGRAM LOGIC ERRORS	77	31
H66	ISOLATE AND CORRECT SYNTAX ERRORS	74	28
H70	PERFORM ANALYSES OF OUTPUT PRODUCT FOR COMPLIANCE WITH SPECIFICATIONS	43	40
H71	PERFORM ANALYSES OF OUTPUT PRODUCT FOR COMPLIANCE WITH STANDARDS	33	36
H72	PERFORM ANALYSES OF SYSTEM TEST RESULTS	40	26
H91	PREPARE DETAILED SYSTEM FLOW CHARTS	37	29
H99	PREPARE OR UPDATE OPERATIONS MANUALS	26	28
H122	REVIEW COMPILATION OR ASSEMBLY OUTPUTS FOR ERRORS	64	29
H130	REVIEW PROGRAM SPECIFICATIONS	45	26
H144	WRITE OR UPDATE DOCUMENTATION FOR PROGRAMS	51	29

TABLE 7

TASKS WHICH BEST DISTINGUISH BETWEEN THE JOB PERFORMANCE
OF 511X1 AND 511X2 PERSONNEL
(PERCENT MEMBERS PERFORMING)

TASK		511X1	511X2	DIFFERENCE
H66	ISOLATE AND CORRECT SYNTAX ERRORS	74	28	+46
H65	ISOLATE AND CORRECT PROGRAM LOGIC ERRORS	77	31	+46
H34	DESK CHECK PROGRAMMING LOGIC	84	40	+44
H118	READ COMPUTER DUMPS FOR PROGRAM BUGS	61	24	+37
H33	DESK CHECK PROGRAM DECK FOR KEYPUNCHING ERRORS	72	36	+36
H122	REVIEW COMPILATION OR ASSEMBLY OUTPUTS FOR ERRORS	64	29	+35
H4	CODE COBOL ROUTINES	65	31	+35
H90	PREPARE DETAILED PROGRAM FLOW CHARTS	48	17	+31
H113	PREPARE SYSTEM OR PROGRAM TEST DATA	51	21	+30
H84	PREPARE CHANGES TO CORRECT ERRORS OR IMPROVE OPERATIONAL PROGRAMS	50	21	+29
H46	EDIT COMPUTER PROGRAMS FOR EFFECTIVE USE OF MEMORY	39	14	+25
H9	CONDUCT OPERATIONAL FIELD TESTS OF NEW OR REVISED PROGRAMS	55	31	+24
H123	REVIEW COMPILATION OR ASSEMBLY OUTPUTS FOR COMPLIANCE WITH SPECIFICATIONS	48	24	+24
H3	CODE ASSEMBLER LANGUAGE ROUTINES	36	12	+24
H80	PERFORM TESTS OF INDEPENDENT OR STAND ALONE PROGRAMS	44	21	+23

incumbents tend to perform different functions at different locations. The major commands have recognized this problem and now feel that this AFSC has been long overdue for consideration to redefine, restructure, or eliminate the AFSC altogether.

In looking at the task performance of 51132/72 personnel, it is evident that their job is not clearly defined. As stated in the ANALYSIS OF DAFSC GROUPS section of this report, very few tasks are performed by a large percentage of these incumbents. The survey data show that very few 51132/72 incumbents perform only system analysis and design functions. Most are also involved to a large extent with other programming duties and responsibilities. In addition, the results from the CAREER LADDER STRUCTURE section of this report indicate that these incumbents do not group together as a distinct group as do the programmers or computer operators. Most 51132/72 respondents were included with groups of programmers and were performing similar tasks to the programmers.

Therefore, the data reflect that some type of action is necessary to better define the role of system analysis and design personnel within the career field. It would appear that a separate ladder for these personnel is not entirely appropriate. A logical and feasible alternative would be to merge system analysis and design functions into the tasks and responsibilities of the 7-skill level programmers. Thus, it is suggested that command and classification personnel review this AFSC and examine alternative ways for utilizing these personnel more effectively within the career field structure.

4. An attempt was also made to identify new skills and requirements within the career field, particularly those relating to data base administration and top-down structured programming. Since these skills are just now being incorporated at most computer activities, this occupational survey was unable to establish any definite trends in these areas. However, a somewhat limited look at the use of top-down structured programming techniques was attempted. While the task statements in the job inventory were not written specifically for measuring the use of these techniques, certain task statements were identified as being highly likely to be performed in the structured programming situation. This allowed examination of programmer groups to determine if any trend was evident. While some use of top-down structured programming was suggested, there were no definitive conclusions which could be drawn. It is recommended that a resurvey of this career field be made in two years in order to look specifically at the developing new skills and requirements not included in this survey, particularly the tasks involved in data base administration (in USAFE) and top-down structured programming.

As a result of the data discussed above, a proposed restructuring of the career field was drawn up by the career field functional manager during his visit to the Occupational Measurement Center. This restructuring proposal is reflected in Figure 3. In conjunction with this proposed restructuring, the current AFM 39-1 specialty descriptions were reviewed

POSSIBLE RESTRUCTURING OF THE COMPUTER SYSTEMS CAREER FIELD

During the analysis of the survey data, the functional manager for this career field from HQ USAF/KRA visited the Occupational Measurement Center. The purpose of his visit was to obtain information for making decisions regarding reclassification actions which may be required for the career field. Tentative conclusions and recommendations put forth as a result of this visit are discussed below.

1. The survey data tended to reflect that the present structure of the computer operator career ladder (AFSC 511X0) was sound. Survey results tended to support the present shredout configurations at the 3- and 5-skill levels and a single AFSC configuration at the 7-skill level. However, use of a special experience identifier (SEI) was recommended for several specialized jobs within the career ladder (primarily that of computer performance evaluation/ management personnel).

2. The present structure of the programming specialist career ladder (AFSC 511X1) was looked at closely, particularly the shredding of the 3- and 5-skill levels by computer systems. Career field members have indicated that shredding programmers along this line has not worked as well as anticipated and that a review of this situation was warranted.

In terms of task performance, incumbents were found to group primarily on the degree of specialization required in their particular applications setting (i.e. business applications, scientific/research applications, etc.). This trend was noted in the CAREER LADDER STRUCTURE section of this report. Thus, the job required of a programmer seems to evolve primarily around whether he is doing monolithic (simple) programming or systems-oriented programming. The type of computer becomes a factor only in the sense that each type of application setting uses a different computer system. Task performance across all application settings was found to be somewhat similar, with all programmers performing a common core of tasks. In most cases, the number of unique tasks found at each applications setting was small. Of course, it is recognized that performance of a task in one type of application may not be of the same degree of complexity or simplicity in another application.

Therefore, based on the survey data, it appears that shredding the programmer AFS by computer systems may not be the optimum structure. On the surface, it would seem that dropping the shreds altogether or shredding by application setting would be very viable alternatives. Thus, a serious reconsideration of the shredout question for programmers should be made by command and classification personnel to assure that these personnel are structured in the most efficient and effective manner.

3. Basically, the system analysis and design AFSC (511X2) has always had its share of problems. In addition to having a small career ladder population (153 incumbents are currently assigned), the job of these incumbents has not been consistent from location to location. Thus, these

incumbents tend to perform different functions at different locations. The major commands have recognized this problem and now feel that this AFSC has been long overdue for consideration to redefine, restructure, or eliminate the AFSC altogether.

In looking at the task performance of 51132/72 personnel, it is evident that their job is not clearly defined. As stated in the ANALYSIS OF DAFSC GROUPS section of this report, very few tasks are performed by a large percentage of these incumbents. The survey data show that very few 51132/72 incumbents perform only system analysis and design functions. Most are also involved to a large extent with other programming duties and responsibilities. In addition, the results from the CAREER LADDER STRUCTURE section of this report indicate that these incumbents do not group together as a distinct group as do the programmers or computer operators. Most 51132/72 respondents were included with groups of programmers and were performing similar tasks to the programmers.

Therefore, the data reflect that some type of action is necessary to better define the role of system analysis and design personnel within the career field. It would appear that a separate ladder for these personnel is not entirely appropriate. A logical and feasible alternative would be to merge system analysis and design functions into the tasks and responsibilities of the 7-skill level programmers. Thus, it is suggested that command and classification personnel review this AFSC and examine alternative ways for utilizing these personnel more effectively within the career field structure.

4. An attempt was also made to identify new skills and requirements within the career field, particularly those relating to data base administration and top-down structured programming. Since these skills are just now being incorporated at most computer activities, this occupational survey was unable to establish any definite trends in these areas. However, a somewhat limited look at the use of top-down structured programming techniques was attempted. While the task statements in the job inventory were not written specifically for measuring the use of these techniques, certain task statements were identified as being highly likely to be performed in the structured programming situation. This allowed examination of programmer groups to determine if any trend was evident. While some use of top-down structured programming was suggested, there were no definitive conclusions which could be drawn. It is recommended that a resurvey of this career field be made in two years in order to look specifically at the developing new skills and requirements not included in this survey, particularly the tasks involved in data base administration (in USAFE) and top-down structured programming.

As a result of the data discussed above, a proposed restructuring of the career field was drawn up by the career field functional manager during his visit to the Occupational Measurement Center. This restructuring proposal is reflected in Figure 3. In conjunction with this proposed restructuring, the current AFM 39-1 specialty descriptions were reviewed

and revised descriptions were developed, based on the restructuring proposals.

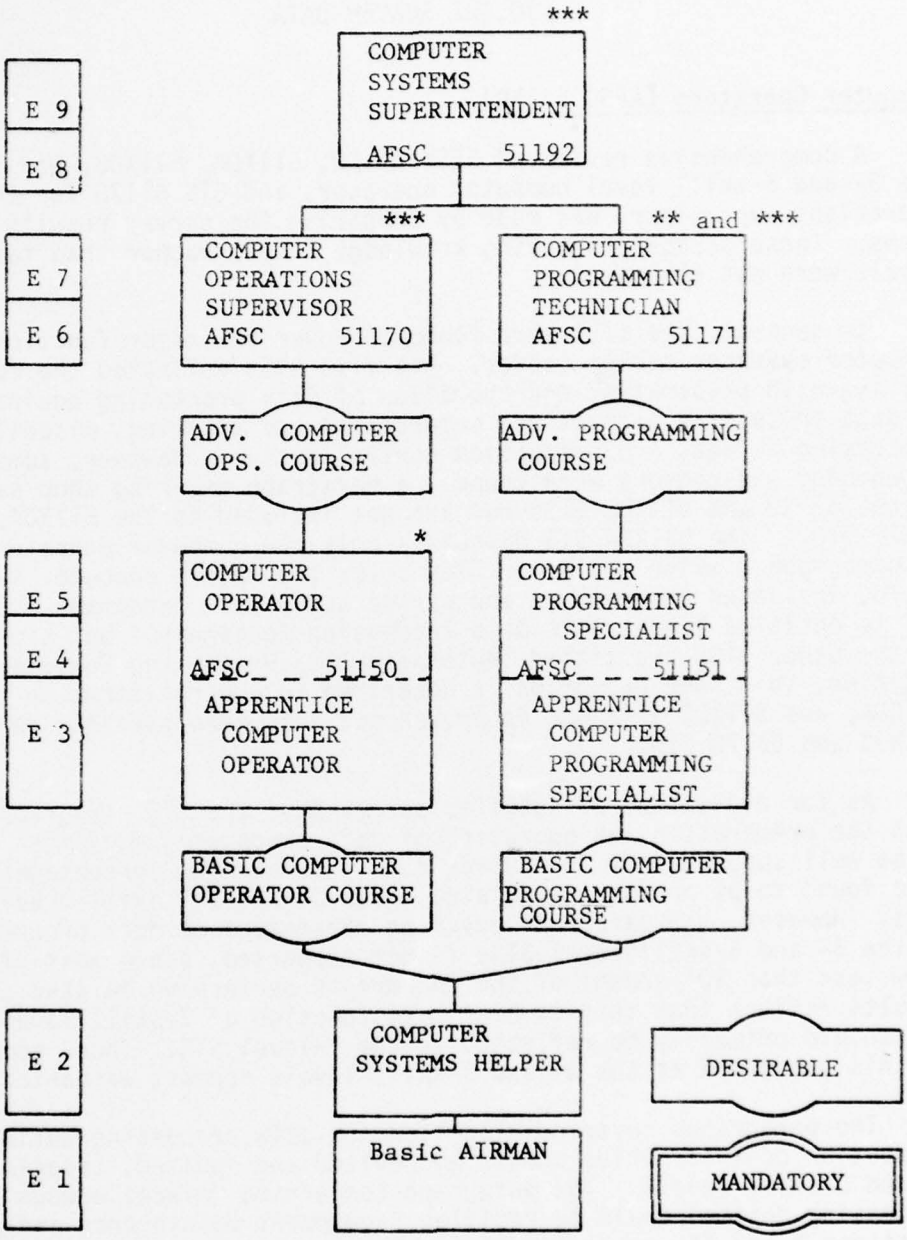
The current AFM 39-1 job descriptions for both the 511X0 and 511X1 career ladders were compared against the results reflected in the CAREER LADDER STRUCTURE and ANALYSIS OF DAFSC GROUPS sections of this report. Each job description was examined closely to determine the accuracy and currency of the listed duties and responsibilities, and to bring the description in line with the proposed restructuring of the career field. The job descriptions for the 511X2 career ladder were not evaluated since the restructuring proposal suggested combining systems analysis functions with those of the programmer.

In general, all job descriptions were found to warrant some amount of revision, since some important functional areas were not covered in sufficient detail and many of the task responsibilities listed under each duty paragraph were somewhat outdated. In addition, the programming technician description (AFSC 51171) was tentatively revised to reflect the addition of the systems analysis functions.

Appendix B contains the proposed revisions for each of the job descriptions examined. Consideration of these revisions during the next review of AFM 39-1 is strongly recommended.

FIGURE 3

PROPOSED RESTRUCTURE OF COMPUTER SYSTEMS CAREER FIELD



* A - BURROUGHS SYSTEMS
  B - HONEYWELL SYSTEMS
  C - IBM SYSTEMS

** COMPUTER SYSTEMS ANALYSIS TECHNICIAN IS IDENTIFIED WITH A SPECIAL EXPERIENCE IDENTIFIER (SEI) IAW AFM 300-4.

*** COMPUTER PERFORMANCE EVALUATION/MANAGEMENT; DATA BASE MANAGEMENT; AND EVALUATION AND ASSISTANCE FUNCTIONS ARE IDENTIFIED WITH A SPECIAL EXPERIENCE IDENTIFIER (SEI) IAW AFM 300-4.

COMPARISON OF SPECIALTY TRAINING STANDARDS (STSs) TO THE SURVEY DATA

Computer Operators (AFSC 511X0)

A comprehensive review of STSs 511X0, 511X0A, 511X0B, and 511X0C for the 3- and 5-skill level computer operator, and STS 51170 for the computer operations supervisor, was made by comparing the survey results to STS items. Those paragraphs having knowledge levels rather than task performance levels were not evaluated.

In general, the STSs were found to cover the major functions of the computer operator career ladder. All five STSs reflected the functions dealing with preparation and operation of data processing equipment, management of data processing activities, supervision and training, miscellaneous data processing duties, and production control duties. However, some inconsistencies in wording and content were found. A paragraph covering shop safety is found in the 511X0 and 511X0B STSs but are not included in the 511X0A, 511X0C, or 51170 STSs. The 511X0A STS discusses only the computer operator career ladder in paragraph 1 while all other STSs cover the entire computer systems career field, including programmers and system analysts. Paragraph 3 of the 511X0A STS is entitled "Electronic Data Processing Equipment," but similar paragraphs on the other STSs are titled "Automatic Data Processing Equipment." In addition, this same paragraph is described in general terms on the 511X0, 511X0A, and 511X0C STSs but is broken out into more specific terms on the 511X0B and 51170 STSs.

As for evaluation of specific paragraphs, the STS paragraph dealing with the preparation and operation of data processing equipment was found to be well supported by the survey data in that high percentages of personnel were found to be performing related tasks across all skill levels and shred-outs. However, the paragraph covering management of data processing activities on the 3- and 5-skill level STSs is not supported, since most of these items show less than 10 percent of the incumbents performing related tasks. Survey results reflect that this is a primary function of 7-skill level personnel and should primarily be reflected in the 7-level STS. Thus, some revision of this paragraph at the 3- and 5-skill levels appears warranted.

The paragraphs covering miscellaneous data processing duties and production control duties should be revised and updated, especially at the 3- and 5-skill levels. The paragraph concerning "miscellaneous data processing duties" could be retitled "equipment maintenance and administrative functions," and the production control paragraph should reflect more tape librarian tasks. These modifications would bring the STS more in line with the proposed revisions of related paragraphs in AFM 39-1 (See Appendix B).

In summary, the 511X0 STSs were found to be highly similar documents in terms of content, with the same major paragraphs being found on all five STSs. Comparisons against the survey data revealed that inclusion of most paragraphs on all STSs was warranted. However, the paragraph concerning

management of data processing activities was found to be inappropriate for the 3- and 5-skill level STSs. In addition, several inconsistencies were found across the STSs. It is recommended that all five STSs need to be reviewed by appropriate personnel for possible modification. It would be advantageous if the proposed 39-1 Specialty Description revisions included in Appendix B of this report also be consulted during any review of these STSs.

Computer Programmers (AFSC 511X1)

As with the 511X0 STSs, a comprehensive review of STSs 511X1, 511X1A, 511X1B, and 511X1C for the 3- and 5-skill level programming specialist and STS 51171 for the programming technician was made. Only those paragraphs reflecting task performance levels were evaluated.

Basically, the 3- and 5-skill level STSs were the same in terms of their contents. The four STSs covered the functions of creating block diagrams and computer programs, testing new/existing computer programs, scheduling and controlling computer input/output, analyzing computer programs, performing related programming functions, supervising programming personnel, and documenting computer programs.

In general, these STS paragraphs were found to reflect the survey data. Only one paragraph was found to be somewhat questionable at these skill levels. This was the paragraph relating to supervisory tasks. With the exception of a few training tasks and some general supervisory tasks, most supervisory tasks listed in this paragraph were found to be performed by less than 10 percent of the 3- and 5-skill level incumbents. Therefore, the appropriateness of several of the items in this paragraph on the 3- and 5-skill level STS should be reviewed. In addition, a review should also be made of the task statements listed under all STS paragraphs to determine if the proposed changes to AFM 39-1 will have any impact on their accuracy.

STS 51171 was also found to be consistent with duties performed in the field as reflected in the survey data. The document generally includes the same functions found on the 3- and 5-skill level STSs. As with the other 511X1 STSs, a review should be made of the task statements listed under each STS paragraph to insure that the impact of the proposed changes to AFM 39-1 will be reflected accurately. In addition, if restructuring of the 511X1 career ladder is approved and systems analyst duties are incorporated into this ladder at the 7-skill level as proposed in the AFM 39-1 revisions in Appendix B, these functions will also have to be included in a revised STS 51171.

ANALYSIS OF TASK DIFFICULTY

From a listing of airmen identified for the 511XX job survey, 130 incumbents in the 7- and 9-skill levels from various commands and locations were selected to rate task difficulty. Tasks were rated on a nine-point scale from extremely low to extremely high difficulty, with difficulty defined as the length of time it takes an average incumbent to learn to do the task. Interrater agreement among the 59 raters who returned booklets was .97. Ratings were adjusted so that tasks of average difficulty had ratings of 5.00.

Table 8 lists the 25 most difficult tasks performed by the survey respondents. These tasks were primarily related to systems design and analysis functions; preparation of Data Automation Requirements (DARs), Data Project Plans (DPPs), and Data Project Directives (DPDs); and higher level language programming applications. Except for two tasks, very small percentages of respondents are performing these more difficult tasks. In general, those tasks rated above average in difficulty were primarily related to programming and systems design tasks, supervision of computer systems personnel, and training.

Table 9 lists the 25 least difficult tasks being performed by career field respondents. These tasks generally involved operating data processing equipment and performing tape librarian functions. More specifically, those tasks rated below average in difficulty were related to performing computer operator tasks; operating data processing equipment such as card punches, sorters, and line printers; and performing production control functions. In most cases, fairly large percentages of respondents are performing these low difficulty tasks.

TABLE 8

TWENTY-FIVE MOST DIFFICULT TASKS PERFORMED BY CAREER FIELD RESPONDENTS

TASK		DIFFICULTY LEVEL	PERCENT MEMBERS PERFORMING
H12	CONSTRUCT MATHEMATICAL MODELS	7.20	1
H142	TEST OR DEBUG COMPILERS	7.15	2
H135	SELECT COMPUTERS FOR SYSTEM APPLICATIONS	7.10	2
H30	DESIGN REAL TIME APPLICATIONS	6.99	4
H118	READ COMPUTER DUMPS FOR PROGRAM BUGS	6.95	19
H143	TRANSLATE PROGRAMS WRITTEN IN ONE COMPUTER LANGUAGE TO A DIFFERENT COMPUTER LANGUAGE	6.87	4
H13	CONVERT PROGRAMS FROM ONE COMPUTER TO ANOTHER COMPUTER WHICH USES A DIFFERENT LANGUAGE	6.86	3
H6	CODE HIGHER LEVEL LANGUAGE ROUTINES OTHER THAN COBOL, FORTRAN, OR JOVIAL	6.76	4
B43	SUPERVISE SYSTEMS ANALYSIS AND DESIGN TEAMS	6.69	1
H65	ISOLATE AND CORRECT PROGRAM LOGIC ERRORS	6.51	23
H134	REVIEW TECHNOLOGICAL DEVELOPMENTS IN PROCESSING, STORAGE, AND INFORMATION RETRIEVAL	6.46	4
H88	PREPARE DATA PROJECT PLANS (DPP)	6.46	3
A17	PLAN FOR EQUIPMENT INSTALLATION	6.44	8
H7	CODE JOVIAL ROUTINES	6.44	2
H51	EVALUATE PROPOSED SYSTEM DESIGNS	6.41	8
H87	PREPARE DATA PROJECT DIRECTIVES (DPD)	6.37	3
H96	PREPARE MANPOWER AND TIME ESTIMATES FOR PROPOSED ADP	6.35	4
H133	REVIEW TECHNOLOGICAL DEVELOPMENTS IN COMMUNICATIONS OR TELEPROCESSING REQUIREMENTS	6.33	3
H52	EVALUATE USE OF EXISTING SYSTEMS OR PROGRAMS FOR PILOT PROJECTS	6.32	3
H29	DESIGN RANDOM ACCESS FORMULAS	6.32	3
H86	PREPARE DATA AUTOMATION REQUIREMENTS (DAR)	6.32	6
H85	PREPARE COST BENEFIT ANALYSES FOR PROPOSED ADP SYSTEMS OR PROGRAMS	6.30	2
H78	PERFORM MANAGEMENT STUDIES	6.27	5
H63	INVESTIGATE SOFTWARE REQUIREMENTS FOR INTEGRATION OF DATA SYSTEMS AND PROCESSING	6.26	4
A16	ORGANIZE SYSTEM ANALYSIS TEAMS	6.25	2

TABLE 9

TWENTY-FIVE LEAST DIFFICULT TASKS PERFORMED BY CAREER FIELD RESPONDENTS

TASK		DIFFICULTY LEVEL	PERCENT MEMBERS PERFORMING
F32	PREPARE PUNCH CARDS FOR SALVAGE	2.20	18
G8	DELIVER COMPUTER PRODUCTS TO OPR	2.24	20
B1	CONDUCT FIRE DRILLS	2.38	6
F33	PREPARE TAPES FOR SALVAGE	2.45	6
G6	CLEAN FACILITIES	2.49	46
G64	RECEIVE OR TRANSPORT OPERATION ROOM SUPPLIES, SUCH AS PAPER OR CARDS	2.50	40
F25	PICK UP OR DELIVER DATA FROM OR TO COMMUNICATIONS CENTER	2.57	15
F26	PLACE INCOMING TAPES OR DISC PACKS UNDER ENVIRONMENTAL CONTROL	2.68	10
F27	PREPARE CARDS, LISTINGS, TAPES, OR DISC PACKS FOR MAILING	2.73	14
G66	REMOVE OR INSTALL TAKE UP REELS	2.77	25
G7	COMPLETE ADPE TAPE IDENTIFICATION FORMS (AF FORM 606)	2.81	34
G19	MONITOR TEMPERATURE AND HUMIDITY OF COMPUTER FACILITY	2.84	37
G65	REMOVE OR INSTALL MAGNETIC TAPE LEADERS	2.89	30
G5	CHANGE OR ALIGN PAPER IN PRINTERS	2.89	52
G36	OPERATE MAGNETIC TAPE CLEANERS	2.90	22
G1	ADJUST COMPUTER TIME CLOCK	2.90	31
F15	LOCATE TAPES OR DISK PACKS IN STORAGE MEDIA OR LIBRARY	2.94	31
G30	OPERATE DECOLLATORS	3.01	26
F31	PREPARE NEW TAPES FOR TAPE LIBRARY	3.07	11
F4	DEGAUSS AND CLEAN TAPES	3.08	17
F36	REVIEW SIGN IN/SIGN OUT LOGS	3.08	15
G70	SELECT, MOUNT, OR DISMOUNT CARRIAGE CONTROL TAPES	3.17	35
A25	SCHEDULE LEAVES OR PASSES	3.18	21
G72	SELECT, MOUNT, OR DISMOUNT TAPES	3.23	47
G10	INSPECT OR CHANGE DISC PACK FILTERS	3.38	5

SUMMARY OF BACKGROUND INFORMATION

Each USAF Job Inventory contains a background information section in which the respondent reports information about himself and his job. This information for the computer operators, computer programmers, and system analysts surveyed is summarized in the following paragraphs.

METHOD OF ASSIGNMENT TO CAREER LADDERS

Table 10 reflects the method of assignment to each of the career ladders surveyed. As shown, computer operators (AFSC 511X0) primarily entered the career field by completing resident technical training (56 percent). Another 24 percent of the incumbents retrained from another AFS. Computer programmers (AFSC 511X1) and system analysts (AFSC 511X2), on the other hand, showed the largest percentage of their members retraining from another AFS (44 percent and 41 percent respectively), with only 30 percent of the programmers and 34 percent of the system analysts entering upon completion of resident technical training. In addition, it is interesting to note that 15 percent of the programmers entered DDA from basic training after completing the bypass test, by far the largest group entering by this method. Conversely, 15 percent of the system analysts were converted from another AFS without training by classification board action, again the largest group entering via this route.

RELATIVE JOB SATISFACTION

Job interest of computer operator and computer programmer incumbents grouped by DAFSC is reflected in Table 11. In both groups, job interest was high, with 71 percent of the computer operators and 78 percent of the computer programmers finding their job interesting. Similar figures were reflected across most skill level groups. However, computer operators holding the B shredout (Honeywell) showed a marked drop in job interest, with only 49 percent of the 3-skill levels and 57 percent of the 5-skill levels finding the job interesting. A similar drop in job interest was also noted for programmers holding the A shredout (Burroughs), where only 67 percent found the job interesting as opposed to 86 percent or better found in the other 5-skill level groups.

Table 12 reflects the job interest for system analysts (DAFSC 51132/72) and computer systems superintendents. As with the computer operator and computer programmer groups, job interest is high, with 66 percent of the systems analysts and 84 percent of the superintendents finding their job interesting. It should be noted that the percent of system analysts finding their job interesting is lower than that of operators or programmers.

PERCEIVED UTILIZATION OF TALENTS AND TRAINING

Respondents were also asked to indicate how well their talents and training were being utilized in their present job. This information is summarized in Tables 13 and 14. As shown in Table 13, a fairly large percentage of computer operators seemed to feel that their talents and training were being utilized fairly well to perfectly. It is interesting to note, however, that there were some differences between shredout groups. Respondents having the A and C shredouts seemed to be somewhat more satisfied as a group as to utilization of their talents and training than those with no shredout or the B shredout. This trend was generally seen across both the 3- and 5-skill level groups.

Table 14 reflects the perceived utilization of talents and training for computer programmer and system analyst groups. As with the computer operators, a large percentage of computer programmers felt that their talents and training were being utilized fairly well to perfectly. However, the percent of 5-skill level incumbents in the no shredout and A shredout groups who felt that their training was being utilized very little or not at all was somewhat higher than for the B and C shredout groups. As for the systems analysts, only 45 percent of these members felt that their training was being utilized fairly well or better. A somewhat higher figure (62 percent) felt that their talents were being utilized properly.

REENLISTMENT INTENTIONS

Reenlistment intentions of the computer operator and computer programmer respondents are detailed in Table 15. System analysts are not included due to the small number of personnel involved in several of the categories. As reflected in the table, first term personnel in all DAFSC groups show a definite trend toward not reenlisting. In most groups, 60 percent or more of these first term personnel indicated "no or probably no." In addition, the percent of computer programmers (including shredouts) indicating "no" to reenlistment intention is somewhat higher than the computer operator groups. As for incumbents in their second enlistment, the trend is just the opposite for the computer operator groups, with 60 percent or more now indicating that they will or probably will reenlist. This trend is not seen for second term computer programmers, with 40 to 50 percent of these personnel still indicating "no or probably no."

Actual reenlistment figures for FY 76, presented in Table 16, are consistent with the expressed intentions of the survey respondents. A high percentage of first-term computer operators and computer programmers did elect to leave the service. Second term actual reenlistment rates also were in line with the expressed intentions of the survey sample, with approximately 60 percent of second-term computer operators electing to reenlist and approximately 33 to 40 percent of the second term computer programmers actually reenlisting.

OTHER BACKGROUND ITEMS

In addition to the job satisfaction and reenlistment intention information, survey respondents were also asked about the type of activity for which they worked, the organizational level of the function for which they worked directly, and the computer(s) which they operated or programmed. Tables I through VI in Appendix C summarize the responses to these questions.

Several interesting trends were noted for computer operators (AFSC 511X0). Computer operators holding the A shredout were located primarily at base level organizations, usually under the Comptroller or at a support activity. Computer operators having the B and C shredouts were more numerous at the MAJCOM level, with B shredout respondents indicating that they were working primarily for a command and control activity or a support activity, and C shredout personnel primarily working with intelligence or satellite tracking activities. As for the computers operated by each DAFSC group, A shredout operators were primarily operating Burroughs B 3500 computers, with a fairly sizable number also operating a Honeywell 700 series computer. B-shredout personnel were primarily operating the Honeywell 6000 computer, with smaller percentages also being reflected for other computers such as Honeywell 700 series, Nova 800, IBM 1400 series, and GE 600 series computers. The C-shredout group primarily were involved with IBM computers. Those personnel possessing no shredout reported operating all types of computers, including those being operated by A, B, and C shredout personnel; however, large percentages of this group operated B 3500 and UNIVAC 1100 series computers.

Computer programmers (AFSC 511X1) showed similar trends as the computer operators in terms of type of activity and computers programmed. However, they did differ somewhat as to organizational level. The largest percentages of programmers in all DAFSC groups were located at the MAJCOM level or at separate operating agencies. The one exception to this trend was seen in the A-shredout group, where a high percentage of personnel also reported working at a base level installation.

TABLE 10

METHOD OF ASSIGNMENT TO CAREER FIELD
(Percent Members Responding)

	DAFSC 511X0	DAFSC 511X1	DAFSC 51132/72
COMPLETED RESIDENT TECHNICAL TRAINING	56	30	34
RECLASSIFIED WITHOUT TECHNICAL TRAINING OR OJT	1	2	3
DIRECT DUTY ASSIGNMENT (DDA) WITHOUT BYPASS TEST	2	2	3
DDA WITH BYPASS TEST	7	15	2
CONVERTED FROM ANOTHER AFS	3	2	15
RETRAINED FROM ANOTHER AFS	24	44	41
REENLISTED AFTER PRIOR SERVICE IN USAF OR OTHER BRANCH OF SERVICE	5	5	2
NO REPLY	2	-	-

TABLE 11

JOB INTEREST OF 511X0 AND 511X1 DAFSC GROUPS
(PERCENT MEMBERS RESPONDING)

I FIND MY JOB:	TOTAL 511X0 (N=1,518)	DAFSC 51130 (N=45)	DAFSC 51130A (N=88)	DAFSC 51130B (N=33)	DAFSC 51130C (N=10)	DAFSC 51150 (N=233)	DAFSC 51150A (N=415)	DAFSC 51150B (N=172)	DAFSC 51150C (N=69)	DAFSC 51170 (N=377)
INTERESTING	71	76	78	49	90	63	77	57	72	75
SO-SO	14	15	11	36	-	13	14	25	9	11
DULL	14	9	11	15	10	23	9	18	19	14
NOT REPORTED	1	-	-	-	-	1	-	-	-	-

	TOTAL 511X1 (N=563)	DAFSC 51151 (N=69)	DAFSC 51151A (N=73)	DAFSC 51151B (N=70)	DAFSC 51151C (N=28)	DAFSC 51171 (N=258)
INTERESTING	78	89	67	86	86	77
SO-SO	10	7	15	7	14	10
DULL	11	13	17	7	-	13
NOT REPORTED	1	-	1	-	-	-

TABLE 12

JOB INTEREST OF 511X2 DAFSC GROUPS
(Percent Members Performing)

I FIND MY JOB	TOTAL 51132/51172 (N=58)	DAFSC 51132 (N=6)	DAFSC 51172 (N=52)	DAFSC 51192 (N=201)
INTERESTING	66	50	67	84
SO-SO	10	-	12	4
DULL	22	50	19	12
NOT REPORTED	2	-	2	-

TABLE 13

PERCEIVED UTILIZATION OF TALENTS AND TRAINING FOR 511X0 DAFSC GROUPS
(PERCENT MEMBERS RESPONDING)

	TOTAL 511X0 (N=1,518)	DAFSC 51130 (N=45)	DAFSC 51130A (N=88)	DAFSC 51130B (N=33)	DAFSC 51130C (N=10)	DAFSC 51150 (N=233)	DAFSC 51150A (N=415)	DAFSC 51150B (N=172)	DAFSC 51150C (N=69)	DAFSC 51170 (N=377)
MY JOB UTILIZES MY TALENTS:										
VERY LITTLE OR NOT AT ALL	24	24	19	48	20	36	22	34	29	18
FAIRLY WELL TO VERY WELL	67	74	74	52	70	55	70	59	67	68
EXCELLENTLY OR PERFECTLY	9	2	7	-	10	8	8	6	4	14
NOT REPORTED	-	-	-	-	-	1	-	1	-	-
MY JOB UTILIZES MY TRAINING:										
VERY LITTLE OR NOT AT ALL	29	40	21	39	30	42	22	37	33	26
FAIRLY WELL TO VERY WELL	60	49	68	58	60	49	68	52	57	61
EXCELLENTLY OR PERFECTLY	10	9	11	3	10	7	9	9	10	13
NOT REPORTED	1	2	-	-	-	2	1	2	-	-

TABLE 14

PERCEIVED UTILIZATION OF TALENTS AND TRAINING FOR 511X1 AND 511X2 DAFSC GROUPS
(Percent Members Responding)

	TOTAL 511X1 (N=563)	DAFSC 51151 (N=69)	DAFSC 51151A (N=73)	DAFSC 51151B (N=70)	DAFSC 51151C (N=28)	DAFSC 51171 (N=258)	TOTAL 51132/51172 (N=58)	DAFSC 51132 (N=6)	DAFSC 51172 (N=52)	DAFSC 51192 (N=201)
MY JOB UTILIZES MY TALENTS:										
VERY LITTLE OR NOT AT ALL	18	19	25	6	21	19	36	50	34	13
FAIRLY WELL TO VERY WELL	69	70	67	76	61	68	53	17	58	65
EXCELLENTLY OR PERFECTLY	13	11	8	18	18	13	9	33	6	22
NOT REPORTED							2		2	
MY JOB UTILIZES MY TRAINING:										
VERY LITTLE OR NOT AT ALL	28	38	32	19	25	28	53	50	54	18
FAIRLY WELL TO VERY WELL	58	46	56	67	57	58	42	33	42	60
EXCELLENTLY OR PERFECTLY	13	16	11	14	18	12	3	17	2	22
NOT REPORTED	1		1			2	2		2	

TABLE 15

REENLISTMENT INTENTIONS OF 511X0 AND 511X1 SURVEY SAMPLES
(Percent Members Responding)

	511X0			511X0A			511X0B			511X0C		
	1st TERM	2nd TERM	CAREER	1st TERM	2nd TERM	CAREER	1st TERM	2nd TERM	CAREER	1st TERM	2nd TERM	CAREER
NO OR PROBABLY NO	61	44	29	60	37	18	52	26	27	68	35	11
YES OR PROBABLY YES	38	53	70	39	62	82	48	70	71	32	65	89
NO RESPONSE	1	3	1	1	1	-	-	4	2	-	-	-

	511X1			511X1A			511X1B			511X1C		
	1st TERM	2nd TERM	CAREER	1st TERM	2nd TERM	CAREER	1st TERM	2nd TERM	CAREER	1st TERM	2nd TERM	CAREER
NO OR PROBABLY NO	68	45	32	66	50	19	70	50	8	84	40	29
YES OR PROBABLY YES	32	52	68	34	50	81	30	46	92	16	50	71
NO RESPONSE	-	3	-	-	-	-	-	4	-	-	10	-

TABLE 16

ACTUAL REENLISTMENT RATES FOR 511XX PERSONNEL
FY 76

	511X0			511X0A			511X0B			511X0C		
	1st TERM	2nd TERM	CAREER	1st TERM	2nd TERM	CAREER	1st TERM	2nd TERM	CAREER	1st TERM	2nd TERM	CAREER
ELIGIBLE TO REENLIST	54	75	289	103	184	74	30	42	21	19	48	14
ACTUALLY REENLISTED	12	47	263	33	122	63	13	23	16	2	28	10
REENLISTMENT RATE	22.2	62.7	91.0	23.0	66.3	85.1	43.3	54.8	76.2	10.5	58.3	71.4

	511X1			511X1A			511X1B			511X1C		
	1st TERM	2nd TERM	CAREER	1st TERM	2nd TERM	CAREER	1st TERM	2nd TERM	CAREER	1st TERM	2nd TERM	CAREER
ELIGIBLE TO REENLIST	13	18	156	35	31	14	19	19	11	7	13	2
ACTUALLY REENLISTED	4	6	141	13	12	12	6	8	8	4	5	2
REENLISTMENT RATE	30.8	33.3	90.4	37.1	38.7	85.7	31.6	42.1	72.7	57.1	38.5	100

COMPARISON OF CURRENT SURVEY TO 1973 SURVEY

The results of this survey were compared to those of Occupational Survey Report 90-51X-077, dated 26 March 1973. The comparison resulted in the following conclusions:

1. Both surveys resulted in similar career ladder structure analysis, with the 1973 study identifying nine functional groups and the present study identifying 11 groups. The only major group identified in this study which was not discussed in the 1973 study was that of computer performance evaluation/management personnel.

2. Task performance of incumbents in each of the various skill level groups was found to have changed very little since the 1973 study. No major differences were noted between the two reports.

3. Job satisfaction of career field respondents was found to be high in both studies. Over 60 percent of the airmen surveyed in both studies found the job interesting and over 50 percent felt that their talents and training were being utilized to some favorable degree in their work. In addition, reenlistment intentions were about the same in both surveys.

4. In terms of task difficulty, both the present study and the 1973 survey found that systems design and programming tasks were the most difficult, while operator tasks were the least difficult.

APPENDIX A

DESCRIPTIVE SUMMARIES FOR CAREER FIELD GROUPS

GROUP ID NUMBER AND TITLE: GRP116 - Computer Operator Specialists

GROUP SIZE: N=893

AVERAGE TIME IN CAREER FIELD: 43.3 months

AVERAGE TIME IN SERVICE: 65.9 months

DAFSC DISTRIBUTION: 51130/A/B/C* (16%); 51150/A/B/C* (66%); 51170 (17%); No Reply (1%)

AVERAGE GRADE: 3.8

AMOUNT OF SUPERVISION: 22% supervise an average of two subordinates

EXPRESSED JOB INTEREST: Dull (14%); So-So (16%); Interesting (71%)

PERCEIVED UTILIZATION OF TALENTS: Not At All Or Very Little: (24%)
Fairly Well To Perfectly: (76%)

PERCEIVED UTILIZATION OF TRAINING: Not At All Or Very Little: (25%)
Fairly Well To Perfectly: (75%)

AVERAGE NUMBER OF TASKS PERFORMED: 46

TIME SPENT ON DUTIES:

DUTY	AVERAGE PERCENT TIME SPENT BY ALL MEMBERS
G OPERATING DATA PROCESSING EQUIPMENT	84
F PERFORMING PRODUCTION CONTROL FUNCTIONS	6

REPRESENTATIVE TASKS:

TASKS	
G72	SELECT, MOUNT, OR DISMOUNT TAPES
G28	OPERATE CONSOLES
G5	CHANGE OR ALIGN PAPER IN PRINTERS
G34	OPERATE LINE PRINTERS
G23	OPERATE CARD READERS
G59	PERFORM SHIFT TURNOVER PROCEDURES
G67	RESPOND TO MESSAGES OR SIGNALS DISPLAYED BY ADPE
G13	LOAD PROGRAMS, FILES, OR DATA BASE

* 3- and 5-skill level totals include shredout personnel

GROUP ID NUMBER AND TITLE: GRP434 - Data Processing and Accounting Machine Operator

GROUP SIZE: N=8

AVERAGE TIME IN CAREER FIELD: 73 months

AVERAGE TIME IN SERVICE: 99 months

DAFSC DISTRIBUTION: 51150/A/B/C* (63%); 51170 (25%); 51172 (12%)

AVERAGE GRADE: 4.9

AMOUNT OF SUPERVISION: 62% supervise an average of one subordinate

EXPRESSED JOB INTEREST: Dull (38%); So-So (25%); Interesting (37%)

PERCEIVED UTILIZATION OF TALENTS: Not At All Or Very Little: (88%)
Fairly Well To Perfectly: (12%)

PERCEIVED UTILIZATION OF TRAINING: Not At All Or Very Little: (88%)
Fairly Well To Perfectly: (12%)

AVERAGE NUMBER OF TASKS PERFORMED: 28

TIME SPENT ON DUTIES:

DUTY	AVERAGE PERCENT TIME SPENT BY ALL MEMBERS
G OPERATING DATA PROCESSING EQUIPMENT	56
B DIRECTING AND IMPLEMENTING	10
C INSPECTING AND EVALUATING	10
D TRAINING	10

REPRESENTATIVE TASKS:

TASKS	
G20	OPERATE ACCOUNTING MACHINES
G25	OPERATE CARD SORTERS
G22	OPERATE CARD PUNCHES
G5	CHANGE OR ALIGN PAPER IN PRINTERS
G24	OPERATE CARD REPRODUCERS
G33	OPERATE INTERPRETERS
G85	WIRE REPRODUCER CONTROL PANELS
G79	WIRE ACCOUNTING MACHINE PANELS

* 5-skill level totals include shredout personnel

GROUP ID NUMBER AND TITLE: GRP068 - Supervisory Personnel

GROUP SIZE: N=311

AVERAGE TIME IN CAREER FIELD: 127 months

AVERAGE TIME IN SERVICE: 208 months

DAFSC DISTRIBUTION: 51150/A/B/C* (10%); 51170 (47%); 51171 (4%); 51172 (1%); 51192 (37%); No Reply (1%)

AVERAGE GRADE: 6.6

AMOUNT OF SUPERVISION: 83% supervise an average of five subordinates

EXPRESSED JOB INTEREST: Dull (10%); So-So (6%); Interesting (84%)

PERCEIVED UTILIZATION OF TALENTS: Not At All Or Very Little: (13%)
Fairly Well To Perfectly: (87%)

PERCEIVED UTILIZATION OF TRAINING: Not At All Or Very Little: (18%)
Fairly Well To Perfectly: (82%)

AVERAGE NUMBER OF TASKS PERFORMED: 82

TIME SPENT ON DUTIES:

DUTY	AVERAGE PERCENT TIME SPENT BY ALL MEMBERS
G OPERATING DATA PROCESSING EQUIPMENT	19
B DIRECTING AND IMPLEMENTING	19
A ORGANIZING AND PLANNING	15
C INSPECTING AND EVALUATING	14
F PERFORMING PRODUCTION CONTROL FUNCTIONS	12

REPRESENTATIVE TASKS:

TASKS	
B5	COUNSEL PERSONNEL ON PERSONAL OR MILITARY RELATED PROBLEMS
B15	INTERPRET POLICIES, DIRECTIVES, OR PROCEDURES FOR SUBORDINATES
C20	INSPECT WORK AREAS
A19	PLAN OR SCHEDULE WORK ASSIGNMENTS OR SHIFTS
A1	ASSIGN PERSONNEL TO DUTY POSITIONS
A5	DRAFT OFFICE INSTRUCTIONS OR COMPUTER OPERATING PROCEDURES

* 5-skill level totals include shredout personnel

GROUP ID NUMBER AND TITLE: GRP286 - NCOIC Data Automation and NCOIC Computer Operations

GROUP SIZE: N=94

AVERAGE TIME IN CAREER FIELD: 141 months

AVERAGE TIME IN SERVICE: 244 months

DAFSC DISTRIBUTION: 51170 (36%); 51172 (2%); 51192 (62%)

AVERAGE GRADE: 7.4

AMOUNT OF SUPERVISION: 95% supervise an average of four subordinates

EXPRESSED JOB INTEREST: Dull (5%); So-So (2%); Interesting (93%)

PERCEIVED UTILIZATION OF TALENTS: Not At All Or Very Little: (10%)
Fairly Well To Perfectly: (90%)

PERCEIVED UTILIZATION OF TRAINING: Not At All Or Very Little: (12%)
Fairly Well To Perfectly: (88%)

AVERAGE NUMBER OF TASKS PERFORMED: 63

TIME SPENT ON DUTIES:

DUTY	AVERAGE PERCENT TIME SPENT BY ALL MEMBERS
B DIRECTING AND IMPLEMENTING	25
A ORGANIZING AND PLANNING	23
C INSPECTING AND EVALUATING	23
E PERFORMING DATA MANAGEMANT FUNCTIONS	9
D TRAINING	9

REPRESENTATIVE TASKS:

TASKS	
C20	INSPECT WORK AREAS
B29	SUPERVISE COMPUTER OPERATIONS SUPERVISORS (AFSC 51170)
B14	INITIATE PERSONNEL ACTIONS
A1	ASSIGN PERSONNEL TO DUTY POSITIONS
C5	EVALUATE COMPLIANCE WITH WORK STANDARDS

GROUP ID NUMBER AND TITLE: GRP232 - NCOIC Computer Operations and Shift Supervisors

GROUP SIZE: N=130

AVERAGE TIME IN CAREER FIELD: 114 months

AVERAGE TIME IN SERVICE: 180 months

DAFSC DISTRIBUTION: 51130/A/B/C* (2%); 51150/A/B/C* (21%); 51170 (59%); 51192 (17%); No Reply (1%)

AVERAGE GRADE: 5.9

AMOUNT OF SUPERVISION: 78% supervise an average of five subordinates

EXPRESSED JOB INTEREST: Dull (15%); So-So (5%); Interesting (80%)

PERCEIVED UTILIZATION OF TALENTS: Not At All Or Very Little: (12%)
Fairly Well To Perfectly: (88%)

PERCEIVED UTILIZATION OF TRAINING: Not At All Or Very Little: (21%)
Fairly Well To Perfectly: (79%)

AVERAGE NUMBER OF TASKS PERFORMED: 110

TIME SPENT ON DUTIES:

DUTY	AVERAGE PERCENT TIME SPENT BY ALL MEMBERS
G OPERATING DATA PROCESSING EQUIPMENT	36
F PERFORMING PRODUCTION CONTROL FUNCTIONS	13
B DIRECTING AND IMPLEMENTING	12
A ORGANIZING AND PLANNING	10
C INSPECTING AND EVALUATING	10

REPRESENTATIVE TASKS:

TASKS	
D3	CONDUCT ON-THE-JOB TRAINING (OJT)
D7	DEMONSTRATE HOW TO OPERATE EQUIPMENT
G19	MONITOR TEMPERATURE AND HUMIDITY OF COMPUTER FACILITY
G59	PERFORM SHIFT TURNOVER PROCEDURES
G2	ADJUST SEQUENCE OF RUNS DURING SHIFT FOR EFFECTIVE MACHINE UTILIZATION
B4	COORDINATE REPAIR OF ADPE WITH MAINTENANCE PERSONNEL
A19	PLAN OR SCHEDULE WORK ASSIGNMENTS OR SHIFTS

* 3- and 5-skill level totals include shredout personnel

GROUP ID NUMBER AND TITLE: GRP185 - NCOIC, Production Control

GROUP SIZE: N=37

AVERAGE TIME IN CAREER FIELD: 123 months

AVERAGE TIME IN SERVICE: 193 months

DAFSC DISTRIBUTION: 51150/A/B/C* (11%); 51170 (60%); 51171 (5%); 51192 (22%); No Reply (2%)

AVERAGE GRADE: 6.3

AMOUNT OF SUPERVISION: 92% supervise an average of five subordinates

EXPRESSED JOB INTEREST: Dull (5%); So-So (8%); Interesting (87%)

PERCEIVED UTILIZATION OF TALENTS: Not At All Or Very Little: (14%)
Fairly Well To Perfectly: (86%)

PERCEIVED UTILIZATION OF TRAINING: Not At All Or Very Little: (16%)
Fairly Well To Perfectly: (84%)

AVERAGE NUMBER OF TASKS PERFORMED: 70

TIME SPENT ON DUTIES:

DUTY	AVERAGE PERCENT TIME SPENT BY ALL MEMBERS
F PERFORMING PRODUCTION CONTROL FUNCTIONS	37
B DIRECTING AND IMPLEMENTING	15
A ORGANIZING AND PLANNING	12
C INSPECTING AND EVALUATING	12
D TRAINING	9

REPRESENTATIVE TASKS:

TASKS	
F2	COORDINATE PROCESSING SCHEDULES WITH OFFICE OF PRIMARY RESPONSIBILITY (OPR)
F3	COORDINATE WITH OPR ON NEW OR REVISED REPORTING REQUIREMENTS
B15	INTERPRET POLICIES, DIRECTIVES, OR PROCEDURES FOR SUBORDINATES
F38	SCHEDULE DUE IN OR DUE OUT MACHINE WORK LOADS
F7	ESTABLISH DAILY PROGRAM RUN PRIORITIES
B5	COUNSEL PERSONNEL ON PERSONAL OR MILITARY RELATED PROBLEMS

* 5-skill level totals include shredout personnel

GROUP ID NUMBER AND TITLE: GRP075 - Computer Performance Evaluation/ Management Personnel

GROUP SIZE: N=67

AVERAGE TIME IN CAREER FIELD: 105 months

AVERAGE TIME IN SERVICE: 176 months

DAFSC DISTRIBUTION: 51150/A/B/C* (22%); 51170 (55%); 51151/A/B/C* (3%); 51171 (5%); 51172 (3%); 51192 (12%)

AVERAGE GRADE: 5.9

AMOUNT OF SUPERVISION: 36% supervise an average of one subordinate

EXPRESSED JOB INTEREST: Dull (6%); So-So (13%); Interesting (81%)

PERCEIVED UTILIZATION OF TALENTS: Not At All Or Very Little: (8%)
Fairly Well To Perfectly: (92%)

PERCEIVED UTILIZATION OF TRAINING: Not At All Or Very Little: (28%)
Fairly Well To Perfectly: (72%)

AVERAGE NUMBER OF TASKS PERFORMED: 47

TIME SPENT ON DUTIES:

DUTY	AVERAGE PERCENT TIME SPENT BY ALL MEMBERS
E PERFORMING DATA MANAGEMENT FUNCTIONS	27
C INSPECTING AND EVALUATING	15
B DIRECTING AND IMPLEMENTING	14
A ORGANIZING AND PLANNING	12
H DEVELPING AND MAINTAINING AUTOMATED DATA SYSTEMS	10
F PERFORMING PRODUCTION CONTROL FUNCTIONS	10

REPRESENTATIVE TASKS:

TASKS	
E18	REVIEW ADPE MAINTENANCE RECORDS (AF FORM 597)
E19	REVIEW MANAGEMENT REPORTS FOR EFFECTIVE EQUIPMENT UTILIZATION
A17	PLAN FOR EQUIPMENT INSTALLATION
E17	REVIEW ADPE DAILY UTILIZATION LOGS (AF FORMS 599)
E3	COORDINATE MACHINE UTILIZATION REPORTING REQUIREMENTS WITH OTHER AGENCIES
E6	EVALUATE PERFORMANCE HISTORY OF EQUIPMENT
E14	PREPARE RECOMMENDATIONS FOR EQUIPMENT ACQUISITION OR REPLACEMENT

* 5-skill level totals include shredout personnel

GROUP ID NUMBER AND TITLE: GRP404 - Base Level Data Management Technicians

GROUP SIZE: N=5

AVERAGE TIME IN CAREER FIELD: 100 months

AVERAGE TIME IN SERVICE: 118 months

DAFSC DISTRIBUTION: 51150A (60%); 51170 (20%); 51151A (20%)

AVERAGE GRADE: 5.0

AMOUNT OF SUPERVISION: None

EXPRESSED JOB INTEREST: Dull (0%); So-So (20%); Interesting (80%)

PERCEIVED UTILIZATION OF TALENTS: Fairly Well To Perfectly: (100%)

PERCEIVED UTILIZATION OF TRAINING: Not At All Or Very Little: (20%)
Fairly Well To Perfectly: (80%)

AVERAGE NUMBER OF TASKS PERFORMED: 54

TIME SPENT ON DUTIES:

DUTY	AVERAGE PERCENT TIME SPENT BY ALL MEMBERS
F PERFORMING PRODUCTION CONTROL FUNCTIONS	33
E PERFORMING DATA MANAGEMENT FUNCTIONS	21
G OPERATING DATA PROCESSING EQUIPMENT	13
H DEVELOPING AND MAINTAINING AUTOMATED DATA SYSTEMS	9
B DIRECTING AND IMPLEMENTING	8

REPRESENTATIVE TASKS:

TASKS

E18 REVIEW ADPE MAINTENANCE RECORDS (AF FORM 597)
E17 REVIEW ADPE DAILY UTILIZATION LOGS (AF FORMS 599)
F17 MAINTAIN FILES OF REPORTS, REGULATIONS, OR DIRECTIVES PERTAINING TO AUTOMATIC DATA PROCESSING (ADP) SYSTEMS
B6 DEVELOP OR MAINTAIN STATUS BOARDS, GRAPHS, OR CHARTS
F39 SCHEDULE IN HOUSE REPORT PROCESSING
F30 PREPARE JOB SHEETS FOR UTILITY PROGRAMS
E12 PREPARE DATA PROCESSING COST REPORTS OR ESTIMATES
E3 COORDINATE MACHINE UTILIZATION REPORTING REQUIREMENTS WITH OTHER AGENCIES

GROUP ID NUMBER AND TITLE: GRP312 - Equipment Management Technicians

GROUP SIZE: N=36

AVERAGE TIME IN CAREER FIELD: 99 months

AVERAGE TIME IN SERVICE: 175 months

DAFSC DISTRIBUTION: 51150/A/B/C* (28%); 51170 (64%); 51192 (8%)

AVERAGE GRADE: 5.9

AMOUNT OF SUPERVISION: 36% supervise an average of two subordinates

EXPRESSED JOB INTEREST: Dull (8%); So-So (11%); Interesting (81%)

PERCEIVED UTILIZATION OF TALENTS: Not At All Or Very Little: (11%)
Fairly Well To Perfectly: (89%)

PERCEIVED UTILIZATION OF TRAINING: Not At All Or Very Little: (25%)
Fairly Well To Perfectly: (75%)

AVERAGE NUMBER OF TASKS PERFORMED: 53

TIME SPENT ON DUTIES:

DUTY	AVERAGE PERCENT TIME SPENT BY ALL MEMBERS
E PERFORMING DATA MANAGEMENT FUNCTIONS	33
B DIRECTING AND IMPLEMENTING	15
C INSPECTING AND EVALUATING	11
F PERFORMING PRODUCTION CONTROL FUNCTIONS	11
A ORGANIZING AND PLANNING	11
H DEVELOPING AND MAINTAINING AUTOMATED DATA SYSTEMS	8

REPRESENTATIVE TASKS:

TASKS	
E18	REVIEW ADPE MAINTENANCE RECORDS (AF FORM 597)
E19	REVIEW MANAGEMENT REPORTS FOR EFFECTIVE EQUIPMENT UTILIZATION
B4	COORDINATE REPAIR OF ADPE WITH MAINTENANCE PERSONNEL
E17	REVIEW ADPE DAILY UTILIZATION LOGS (AF FORMS 599)
E6	EVALUATE PERFORMANCE HISTORY OF EQUIPMENT
E12	PREPARE DATA PROCESSING COST REPORTS OR ESTIMATES
E14	PREPARE RECOMMENDATIONS FOR EQUIPMENT ACQUISITION OR REPLACEMENT
A17	PLAN FOR EQUIPMENT INSTALLATION

* 5-skill level totals include shredout personnel

GROUP ID NUMBER AND TITLE: GRP473 Evaluation and Assistance Team Members

GROUP SIZE: N=9

AVERAGE TIME IN CAREER FIELD: 131 months

AVERAGE TIME IN SERVICE: 193 months

DAFSC DISTRIBUTION: 51170 (56%); 51151B (11%); 51192 (33%)

AVERAGE GRADE: 6.7

AMOUNT OF SUPERVISION: 33% supervise an average of two subordinates

EXPRESSED JOB INTEREST: Dull (11%); So-So (22%); Interesting (67%)

PERCEIVED UTILIZATION OF TALENTS: Not At All Or Very Little: (11%)
Fairly Well To Perfectly: (89%)

PERCEIVED UTILIZATION OF TRAINING: Not At All Or Very Little: (44%)
Fairly Well To Perfectly: (56%)

AVERAGE NUMBER OF TASKS PERFORMED: 39

TIME SPENT ON DUTIES:

DUTY	AVERAGE PERCENT TIME SPENT BY ALL MEMBERS
C INSPECTING AND EVALUATING	36
E PERFORMING DATA MANAGEMENT FUNCTIONS	22
B DIRECTING AND IMPLEMENTING	12
A ORGANIZING AND PLANNING	11

REPRESENTATIVE TASKS:

TASKS

C5 EVALUATE COMPLIANCE WITH WORK STANDARDS
C8 EVALUATE INSPECTION REPORTS OR PROCEDURES
E10 PERFORM DATA PROCESSING INSTALLATION (DPI) PERIODIC INSPECTIONS
C2 EVALUATE ADMINISTRATIVE FORMS, FILES, OR PROCEDURES
C17 INSPECT EQUIPMENT
C11 EVALUATE MAINTENANCE OR USE OF WORK SPACE, EQUIPMENT, OR SUPPLIES

GROUP ID NUMBER AND TITLE: GRP095 - Training Personnel

GROUP SIZE: N=29

AVERAGE TIME IN CAREER FIELD: 85 months

AVERAGE TIME IN SERVICE: 147 months

DAFSC DISTRIBUTION: 51150/A/B/C* (28%); 51170 (38%); 51151/A/B/C* (7%); 51171 (17%); 51192 (10%)

AVERAGE GRADE: 5.6

AMOUNT OF SUPERVISION: 10% supervise an average of one subordinate

EXPRESSED JOB INTEREST: Dull (14%); So-So (7%); Interesting (79%)

PERCEIVED UTILIZATION OF TALENTS: Not At All Or Very Little: (17%)
Fairly Well To Perfectly: (83%)

PERCEIVED UTILIZATION OF TRAINING: Not At All Or Very Little: (28%)
Fairly Well To Perfectly: (72%)

AVERAGE NUMBER OF TASKS PERFORMED: 28

TIME SPENT ON DUTIES:

DUTY	AVERAGE PERCENT TIME SPENT BY ALL MEMBERS
D TRAINING	57
G OPERATING DATA PROCESSING EQUIPMENT	17
A ORGANIZING AND PLANNING	8
H DEVELOPING AND MAINTAINING AUTOMATED DATA SYSTEMS	7
B DIRECTING AND IMPLEMENTING	7

REPRESENTATIVE TASKS:

TASKS	
D4	CONDUCT RESIDENT TECHNICAL TRAINING COURSES
D10	DEVELOP TRAINING AIDS
D14	OPERATE TRAINING AIDS OR EQUIPMENT
D2	ADMINISTER OR SCORE TESTS
D9	DEVELOP COURSE CURRICULA, PLANS OF INSTRUCTIONS (POI), OR SPECIALTY TRAINING STANDARDS (STS)
D17	RATE TRAINING PROGRESS OF INDIVIDUALS

* 5-skill level totals include shredout personnel

GROUP ID NUMBER AND TITLE: GRP026 - Production Control Personnel

GROUP SIZE: N=299

AVERAGE TIME IN CAREER FIELD: 54 months

AVERAGE TIME IN SERVICE: 82 months

DAFSC DISTRIBUTION: 51130/A/B/C* (8%); 51150/A/B/C* (62%); 51170 (16%);
51131/A/B/C* (2%); 51151/A/B/C* (8%); 51171 (4%)

AVERAGE GRADE: 4.2

AMOUNT OF SUPERVISION: 17% supervise an average of two subordinates

EXPRESSED JOB INTEREST: Dull (18%); So-So (17%); Interesting (65%)

PERCEIVED UTILIZATION OF TALENTS: Not At All Or Very Little: (34%)
Fairly Well To Perfectly: (66%)

PERCEIVED UTILIZATION OF TRAINING: Not At All Or Very Little: (44%)
Fairly Well To Perfectly: (56%)

AVERAGE NUMBER OF TASKS PERFORMED: 32

TIME SPENT ON DUTIES:

DUTY	AVERAGE PERCENT TIME SPENT BY ALL MEMBERS
F PERFORMING PRODUCTION CONTROL FUNCTIONS	58
G OPERATING DATA PROCESSING EQUIPMENT	25
H DEVELOPING AND MAINTAINING AUTOMATED DATA SYSTEMS	5

REPRESENTATIVE TASKS:

TASKS	
F28	PREPARE CONTROL CARDS ON JOB EXECUTION CARDS
F15	LOCATE TAPES OR DISK PACKS IN STORAGE MEDIA OR LIBRARY
F2	COORDINATE PROCESSING SCHEDULES WITH OFFICE OF PRIMARY RESPONSIBILITY (OPR)
F41	SCHEDULE RERUNS TO CORRECT INPUT OR OUTPUT ERRORS
F14	INFORM OPR OF REPEATED INPUT DATA ERRORS
F3	COORDINATE WITH OPR ON NEW OR REVISED REPORTING REQUIREMENTS

* 3- and 5-skill level totals include shredout personnel

GROUP ID NUMBER AND TITLE: GRP033 - System Monitors

GROUP SIZE: N=201

AVERAGE TIME IN CAREER FIELD: 58 months

AVERAGE TIME IN SERVICE: 89 months

DAFSC DISTRIBUTION: 51131/A/B/C* (4%); 51150/A/B/C* (59%); 51170 (18%); 51131/A/B/C* (2%); 51151/A/B/C* (11%); 51171 (4%); 51172 (1%); 51192 (1%)

AVERAGE GRADE: 4.4

AMOUNT OF SUPERVISION: 17% supervise an average of two subordinates

EXPRESSED JOB INTEREST: Dull (12%); So-So (13%); Interesting (75%)

PERCEIVED UTILIZATION OF TALENTS: Not At All Or Very Little: (26%)
Fairly Well To Perfectly: (74%)

PERCEIVED UTILIZATION OF TRAINING: Not At All Or Very Little: (35%)
Fairly Well To Perfectly: (65%)

AVERAGE NUMBER OF TASKS PERFORMED: 37

TIME SPENT ON DUTIES:

DUTY	AVERAGE PERCENT TIME SPENT BY ALL MEMBERS
F PERFORMING PRODUCTION CONTROL FUNCTIONS	63
G OPERATING DATA PROCESSING EQUIPMENT	19
H DEVELOPING AND MAINTAINING AUTOMATED DATA SYSTEMS	7

REPRESENTATIVE TASKS:

TASKS	
F28	PREPARE CONTROL CARDS OR JOB EXECUTION CARDS
F2	COORDINATE PROCESSING SCHEDULES WITH OFFICE OF PRIMARY RESPONSIBILITY (OPR)
F41	SCHEDULE RERUNS TO CORRECT INPUT OR OUTPUT ERRORS
F14	INFORM OPR OF REPEATED INPUT DATA ERRORS
F3	COORDINATE WITH OPR ON NEW OR REVISED REPORTING REQUIREMENTS
F23	PERFORM ASSEMBLY, REARRANGEMENT, OR SPOT EDITS OR INPUT DATA
F40	SCHEDULE PROGRAMS TO PROCESS JOBS

* 3- and 5-skill level totals include shredout personnel

GROUP ID NUMBER AND TITLE: GRP059 - Tape Librarians

GROUP SIZE: N=67

AVERAGE TIME IN CAREER FIELD: 51 months

AVERAGE TIME IN SERVICE: 70 months

DAFSC DISTRIBUTION: 51130/A/B/C* (12%); 51150/A/B/C* (70%); 51170 (15%); 51171 (3%)

AVERAGE GRADE: 4.1

AMOUNT OF SUPERVISION: 19% supervise an average of three subordinates

EXPRESSED JOB INTEREST: Dull (21%); So-So (27%); Interesting (52%)

PERCEIVED UTILIZATION OF TALENTS: Not At All Or Very Little: (43%)
Fairly Well To Perfectly: (57%)

PERCEIVED UTILIZATION OF TRAINING: Not At All Or Very Little: (58%)
Fairly Well To Perfectly: (42%)

AVERAGE NUMBER OF TASKS PERFORMED: 28

TIME SPENT ON DUTIES:

DUTY	AVERAGE PERCENT TIME SPENT BY ALL MEMBERS
F PERFORMING PRODUCTION CONTROL FUNCTIONS	56
G OPERATING DATA PROCESSING EQUIPMENT	27

REPRESENTATIVE TASKS:

TASKS	
F15	LOCATE TAPES OR DISK PACKS IN STORAGE MEDIA OR LIBRARY
F4	DEGAUSS AND CLEAN TAPES
G36	OPERATE MAGNETIC TAPE CLEANERS
F31	PREPARE NEW TAPES FOR TAPE LIBRARY
F20	MAINTAIN SCRATCH TAPE OR DISK PACK INVENTORY LISTS
F11	IDENTIFY UNUSABLE TAPES OR DISK PACKS
F1	CERTIFY TAPES
F26	PLACE INCOMING TAPES OR DISC PACKS UNDER ENVIRONMENTAL CONTROL

* 3- and 5-skill level totals include shredout personnel

GROUP ID NUMBER AND TITLE: GRP088 Production Control Clerks

GROUP SIZE: N=31

AVERAGE TIME IN CAREER FIELD: 37 months

AVERAGE TIME IN SERVICE: 62 months

DAFSC DISTRIBUTION: 51130/A/B/C* (26%); 51150/A/B/C* (65%); 51170 (3%); 51131/A/B/C* (3%); 51151/A/B/C* (3%)

AVERAGE GRADE: 3.6

AMOUNT OF SUPERVISION: 6% supervise an average of one subordinate

EXPRESSED JOB INTEREST: Dull (52%); So-So (19%); Interesting (27%)

PERCEIVED UTILIZATION OF TALENTS: Not At All Or Very Little: (71%)
Fairly Well To Perfectly: (29%)

PERCEIVED UTILIZATION OF TRAINING: Not At All Or Very Little: (74%)
Fairly Well To Perfectly: (26%)

AVERAGE NUMBER OF TASKS PERFORMED: 11

TIME SPENT ON DUTIES:

DUTY	AVERAGE PERCENT TIME SPENT BY ALL MEMBERS
G OPERATING DATA PROCESSING EQUIPMENT	60
F PERFORMING PRODUCTION CONTROL FUNCTIONS	35

REPRESENTATIVE TASKS:

TASKS

G30 OPERATE DECOLLATORS
G33 OPERATE INTERPRETERS
G21 OPERATE BURSTERS
F36 REVIEW SIGN IN/SIGN OUT LOGS
G29 OPERATE COPYING MACHINES
G8 DELIVER COMPUTER PRODUCTS TO OPR

* 3- and 5-skill level totals include shredout personnel

GROUP ID NUMBER AND TITLE: GRP094 Programming Specialists

GROUP SIZE: N=439

AVERAGE TIME IN CAREER FIELD: 65 months

AVERAGE TIME IN SERVICE: 125 months

DAFSC DISTRIBUTION: 51131/A/B/C* (5%); 51151/A/B/C* (35%); 51171 (44%); 51172 (3%); 51192 (9%); other (4%)

AVERAGE GRADE: 5.2

AMOUNT OF SUPERVISION: 21% supervise an average of two subordinates

EXPRESSED JOB INTEREST: Dull (7%); So-So (8%); Interesting (85%)

PERCEIVED UTILIZATION OF TALENTS: Not At All Or Very Little: (10%)
Fairly Well To Perfectly: (90%)

PERCEIVED UTILIZATION OF TRAINING: Not At All Or Very Little: (20%)
Fairly Well To Perfectly: (80%)

AVERAGE NUMBER OF TASKS PERFORMED: 64

TIME SPENT ON DUTIES:

DUTY	AVERAGE PERCENT TIME SPENT BY ALL MEMBERS
H DEVELOPING AND MAINTAINING AUTOMATED DATA SYSTEMS	75
G OPERATING DATA PROCESSING EQUIPMENT	9

REPRESENTATIVE TASKS:

TASKS	
H65	ISOLATE AND CORRECT PROGRAM LOGIC ERRORS
H34	DESK CHECK PROGRAMMING LOGIC
H66	ISOLATE AND CORRECT SYNTAX ERRORS
H122	REVIEW COMPILATION OR ASSEMBLY OUTPUTS FOR ERRORS
H31	DESIGN RECORD FORMATS
H32	DESIGN REPORT FORMATS
H9	CONDUCT OPERATIONAL FIELD TESTS OF NEW OR REVISED PROGRAMS
H90	PREPARE DETAILED PROGRAM FLOW CHARTS
H113	PREPARE SYSTEM OR PROGRAM TEST DATA

* 3- and 5-skill level totals include shredout personnel

GROUP ID NUMBER AND TITLE: GRP106 System Analysts and Programming Specialists

GROUP SIZE: N=30

AVERAGE TIME IN CAREER FIELD: 143 months

AVERAGE TIME IN SERVICE: 203 months

DAFSC DISTRIBUTION: 51150/A/B/C* (3%); 51170 (7%); 51131/A/B/C* (3%)
51151/A/B/C* (37%); 51172 (27%); 51192 (23%)

AVERAGE GRADE: 6.7

AMOUNT OF SUPERVISION: 40% supervise an average of three subordinates

EXPRESSED JOB INTEREST: Dull (17%); Interesting (83%)

PERCEIVED UTILIZATION OF TALENTS: Not At All Or Very Little: (23%)
Fairly Well To Perfectly: (77%)

PERCEIVED UTILIZATION OF TRAINING: Not At All Or Very Little: (30%)
Fairly Well To Perfectly: (70%)

AVERAGE NUMBER OF TASKS PERFORMED: 103

TIME SPENT ON DUTIES:

DUTY	AVERAGE PERCENT TIME SPENT BY ALL MEMBERS
H DEVELOPING AND MAINTAINING AUTOMATED DATA SYSTEMS	59
B DIRECTING AND IMPLEMENTING	8
A ORGANIZING AND PLANNING	7
C INSPECTING AND EVALUATING	7

REPRESENTATIVE TASKS:

TASKS	
C13	EVALUATE PROGRAMS OR SYSTEMS DEVELOPMENT
H10	CONDUCT OR ATTEND DESIGN ANALYSIS TEAM MEETINGS
H55	IDENTIFY DATA BASE REQUIREMENTS
H130	REVIEW PROGRAM SPECIFICATIONS
H72	PERFORM ANALYSES OF SYSTEM TEST RESULTS
H15	COORDINATE DATA AUTOMATION REQUIREMENTS (DAR) WITH APPROPRIATE AGENCIES
H19	COORDINATE IMPACT OF PROPOSED SYSTEMS WITH PROGRAMMERS AND OPERATORS

* 3- and 5-skill level totals include shredout personnel

GROUP ID NUMBER AND TITLE: GRP074 General Programmers

GROUP SIZE: N=66

AVERAGE TIME IN CAREER FIELD: 45 months

AVERAGE TIME IN SERVICE: 91 months

DAFSC DISTRIBUTION: 51131/A/B/C* (8%); 51151/A/B/C* (49%); 51171 (38%); 51192 (5%)

AVERAGE GRADE: 4.4

AMOUNT OF SUPERVISION: 8% supervise an average of one subordinate

EXPRESSED JOB INTEREST: Dull (18%); So-So (9%); Interesting (73%)

PERCEIVED UTILIZATION OF TALENTS: Not At All Or Very Little: (23%)
Fairly Well To Perfectly: (77%)

PERCEIVED UTILIZATION OF TRAINING: Not At All Or Very Little: (21%)
Fairly Well To Perfectly: (79%)

AVERAGE NUMBER OF TASKS PERFORMED: 14

TIME SPENT ON DUTIES:

DUTY	AVERAGE PERCENT TIME SPENT BY ALL MEMBERS
H DEVELOPING AND MAINTAINING AUTOMATED DATA SYSTEMS	87
G OPERATING DATA PROCESSING EQUIPMENT	6

REPRESENTATIVE TASKS:

TASKS	
H34	DESK CHECK PROGRAMMING LOGIC
H4	CODE COBOL ROUTINES
H65	ISOLATE AND CORRECT PROGRAM LOGIC ERRORS
H33	DESK CHECK PROGRAM DECK FOR KEYPUNCHING ERRORS
H66	ISOLATE AND CORRECT SYNTAX ERRORS

* 3- and 5-skill level totals include shredout personnel

GROUP ID NUMBER AND TITLE: GRP213 System Analysts and Evaluators

GROUP SIZE: N=7

AVERAGE TIME IN CAREER FIELD: 74 months

AVERAGE TIME IN SERVICE: 183 months

DAFSC DISTRIBUTION: 51170 (29%); 51171 (43%); 51172 (14%); 51192 (14%)

AVERAGE GRADE: 6.1

AMOUNT OF SUPERVISION: 14% supervise an average of one subordinate

EXPRESSED JOB INTEREST: Dull (14%); Interesting (86%)

PERCEIVED UTILIZATION OF TALENTS: Not At All Or Very Little: (29%)
Fairly Well To Perfectly: (71%)

PERCEIVED UTILIZATION OF TRAINING: Not At All Or Very Little: (57%)
Fairly Well To Perfectly: (43%)

AVERAGE NUMBER OF TASKS PERFORMED: 40

TIME SPENT ON DUTIES:

DUTY	AVERAGE PERCENT TIME SPENT BY ALL MEMBERS
H DEVELOPING AND MAINTAINING AUTOMATED DATA SYSTEMS	64
G OPERATING DATA PROCESSING EQUIPMENT	21

REPRESENTATIVE TASKS:

TASKS	
H71	PERFORM ANALYSES OF OUTPUT PRODUCT FOR COMPLIANCE WITH STANDARDS
H72	PERFORM ANALYSES OF SYSTEM TEST RESULTS
H128	REVIEW OR EDIT PROGRAM OPERATION MANUALS
H70	PERFORM ANALYSES OF OUTPUT PRODUCT FOR COMPLIANCE WITH SPECIFICATIONS
C13	EVALUATE PROGRAMS OR SYSTEMS DEVELOPMENT
H132	REVIEW SYSTEMS INTERFACE OR INTEGRATION REQUIREMENTS
H51	EVALUATE PROPOSED SYSTEM DESIGNS

GROUP ID NUMBER AND TITLE: GRP370 Data Automation Systems Technicians

GROUP SIZE: N=8

AVERAGE TIME IN CAREER FIELD: 104 months

AVERAGE TIME IN SERVICE: 190 months

DAFSC DISTRIBUTION: 51170 (12%); 51171 (25%); 51172 (38%); 51192 (25%)

AVERAGE GRADE: 6.4

AMOUNT OF SUPERVISION: none

EXPRESSED JOB INTEREST: So-So (12%); Interesting (88%)

PERCEIVED UTILIZATION OF TALENTS: Not At All Or Very Little: (12%)
Fairly Well To Perfectly: (88%)

PERCEIVED UTILIZATION OF TRAINING: Not At All Or Very Little: (50%)
Fairly Well To Perfectly: (50%)

AVERAGE NUMBER OF TASKS PERFORMED: 31

TIME SPENT ON DUTIES:

DUTY	AVERAGE PERCENT TIME SPENT BY ALL MEMBERS
H DEVELOPING AND MAINTAINING AUTOMATED DATA SYSTEMS	64
E PERFORMING DATA MANAGEMENT FUNCTIONS	12

REPRESENTATIVE TASKS:

TASKS	
H18	COORDINATE DATA PROJECT PLANS (DPP) WITH APPROPRIATE AGENCIES
H15	COORDINATE DATA AUTOMATION REQUIREMENTS (DAR) WITH APPROPRIATE AGENCIES
H17	COORDINATE DATA PROJECT DIRECTIVES (DPD) WITH APPROPRIATE AGENCIES
H119	REVIEW DAR
H120	REVIEW DPD
H121	REVIEW DPP

APPENDIX B

PROPOSED REVISIONS TO AFM 39-1 SPECIALTY DESCRIPTIONS

COMPUTER OPERATOR

1. SPECIALTY SUMMARY

Prepares for operation and operates computer systems equipment and punched card accounting machines (PCAM); and processes and controls data flow to insure timely processing of data and controlled reports and data products.

2. DUTIES AND RESPONSIBILITIES

a. Prepares computer equipment and punched card machines for data processing operation: Performs start up operations; performs power on or power off procedures; selects and mounts tapes, disc packs, or carriage control tapes; selects input or output files; loads programs, files, or data base.

b. Operates automatic data processing equipment (ADPE): Operates consoles; responds to messages or signals displayed by ADPE; performs recoveries of machines due to electrical or mechanical failures; isolates causes of machine stops or malfunctions; answers status inquiries from remote users; operates other data processing equipment such as card punches, readers, interpreters, sorters, and decollaters; performs shift turnover procedures.

c. Performs production control and tape librarian functions: Degausses and cleans tapes; identifies unusable tapes or disc packs; locates tapes or disk packs in storage media or library; prepares new tapes for library; establishes daily program run priorities; informs OPR of repeated input data errors; schedules due in or due out machine work loads.

d. Performs equipment maintenance and administrative functions: Changes paper in printers; completes machine utilization records such as Form 597, 599, and 606; monitors temperature and humidity of computer facilities; maintains supply levels and records; performs equipment maintenance of ADPE and PCAM; inspects equipment, supplies, and work areas; coordinates repair of ADPE with maintenance personnel.

e. Performs supervisory functions: Conducts on-the-job training (OJT); demonstrates how to operate equipment; plans or schedules work assignments and shifts; counsels personnel on personal or military related problems; interprets policies, directives, or procedures for subordinates.

COMPUTER OPERATIONS SUPERVISOR

1. SPECIALTY SUMMARY

Supervises, plans, and coordinates operations of computer systems equipment and punched card accounting machines (PCAM); and activities relating to production control and equipment management.

2. DUTIES AND RESPONSIBILITIES

a. Plans and schedules computer operations activities: Plans and schedules input, output, and equipment operations of data processing systems to provide accurate and timely data to using activities; establishes work performance standards, subsection responsibilities, and work flow between sections; analyzes records and reports of production, operating time, and down time of data processing equipment to determine operation effectiveness; prepares recommendations for equipment acquisition or replacement; prepares data processing cost reports or estimates; insures availability of necessary supplies for effective operation; maintains liaison with using activities to achieve efficient data processing equipment utilization; improves work methods and procedures to insure full use of information.

b. Supervises computer operations personnel: Schedules personnel workloads, and shift and duty assignments; establishes work priorities; supervises maintenance of utilization records of data processing equipment; reviews completed data reports and programs for accuracy, adequacy, and compliance with instructions; observes equipment operations to insure conformance with established standards; rates personnel for performance; advises personnel on personal or military related problems; interprets policies, directives, or procedures for subordinates; schedules leaves or passes; briefs newly assigned personnel; establishes and conducts on-the-job training (OJT) for computer operations personnel; instructs and orients subordinates in local and standardized procedures.

c. Evaluates and assists computer operations activities: Makes periodic evaluation and assistance visits; notes discrepancies and recommends corrective action. Rates effectiveness of data processing program to include such areas as manpower, personnel, and training. Conducts computer performance evaluation/management tasks, including the review of ADPE maintenance records and daily utilization logs and evaluation of the performance history of equipment.

d. Performs production control functions: Processes schedules, coordinates new or revised reporting requirements, and advises of repeated input data errors with OPRs. Schedules due in or due out machine workloads; establishes daily program run priorities; performs assembly, rearrangement, or spot edits of input data; evaluates requirements for output products; supervises production control functions.

e. Performs technical computer operations functions: Operates computers and PCAM systems; performs program debugging operations; participates with technical personnel such as programmers, systems analysts, other operators, and other user personnel concerning equipment capability, operation, reports and output products, or other production problems. Tests new operating systems or programs; performs storage media (tape/disk) library functions; establishes equipment or facilities maintenance schedules.

PROGRAMMING SPECIALIST

1. SPECIALTY SUMMARY

Prepares computer systems program routines and procedures; tests routines for program verification; provides program documentation and maintenance; conducts systems studies of functional areas to evaluate and develop automated data systems; prepares documentation of proposals and specifications.

2. DUTIES AND RESPONSIBILITIES

a. Prepares block diagrams, flow charts, and computer coding: Prepares general or expanded block diagrams; prepares detailed system and program flow charts; develops document flow charts of systems and general flow charts of systems operations; codes from expanded block diagrams into Cobol, Fortran, Assembler language, or higher level language programming.

b. Prepares, tests, and documents computer routines and programs: Determines input/output devices; designs input source data and prepares output formats and instructions; prepares system or program test data; prepares adequate computer edits of input data and analyzes output products for programming logic, program logic errors, syntax errors, and keypunching errors; arranges test data prior to initial computer processing; initially tests routines and isolates and corrects programming errors; prepares, writes, or updates program documentation. Operates data processing equipment as appropriate.

c. Schedules and controls computer input/output: Insures that input data is complete prior to scheduling programs for computer runs. Establishes and updates program handling to the automated grid or other production control system. Insures output production is timely, accurate, and conforms to the established procedures. Maintains familiarity with and utilizes, whenever practicable, internal and remote inquiry techniques to provide functional managers with desired products.

d. Analyzes and updates existing programs: Analyzes existing programs to determine that accuracy is being maintained and the use of techniques, routines, and ADPE are being applied to maximum advantage; develops new and improved processing procedures and techniques and applies them to existing programs.

e. Performs related programming functions: Confers with systems analyst and subject matter personnel in preparation of program routines. Develops and maintains generalized utility routines for application in appropriate overall programs. Reviews existing routines for applicability of new techniques. Assists in developing machine logic charts for machine routines. Establishes and maintains program library of routines and subroutines.

f. Organizes and plans work of programming personnel: Conducts or participates in staff meetings; develops or maintains status boards, graphs, or charts; conducts on-the-job training for programming personnel.

PROGRAMMING TECHNICIAN

1. SPECIALTY SUMMARY

Develops complete computer programs including all steps of interpretation of general specifications, coding, setting up printing formats, testing, and program maintenance and modification; analyzes and designs automated systems; monitors functional data systems; and supervises programming activities.

2. DUTIES AND RESPONSIBILITIES

a. Plans computer programs and programming procedures: Designs computer systems and programs to meet the requirements of management. From specific problem definitions, develops and plans computer routines necessary to achieve efficient and effective operating programs. Provides management with guidance and advise in the development of data automation proposals.

b. Prepares block diagrams, flow charts, and computer coding: Prepares general or expanded block diagrams; prepares detailed system and program flow charts; develops document flow charts of systems and general flow charts of systems operations; codes from expanded block diagrams into Cobol, Fortran, Assembler language, or higher level language programming.

c. Prepares, tests, and documents computer routines and programs: Determines input/output devices; designs input source data and prepares output formats and instructions; prepares system or program test data; prepares adequate computer edits of input data and analyzes output products for programming logic, program logic errors, syntax errors, and keypunching errors; arranges test data prior to initial computer processing; initially tests routines and isolates and corrects programming errors; prepares, writes, or updates program documentation. Operates data processing equipment as appropriate.

d. Schedules and controls computer input/output: Insures that input data is complete prior to scheduling programs for computer runs. Establishes and updates program handling to the automated grid or other production control system. Insures output production is timely, accurate, and conforms to the established procedures. Maintains familiarity with and utilizes, whenever practicable, internal and remote inquiry techniques to provide functional managers with desired products.

e. Analyzes and updates existing programs: Analyzes existing programs to determine that accuracy is being maintained and the use of techniques, routines, and ADPE are being applied to maximum advantage; develops new and improved processing procedures and techniques and applies them to existing programs.

f. Designs automated systems: Defines requirements; prepares automated systems studies; analyzes requests for information; organizes system study teams and conducts briefings to all interested personnel. Prepares and

performs analysis of documents and items; determines how requirements can be met more effectively by automated methods; determines systematic procedures necessary for solution of problems arising in data processing systems; determines and recommends most reasonable approach in design of new systems, or modification of existing systems; prepares general systems flow charts, standard language statements, data pertinent to workloads, and present and proposed costs. Determines required data processing equipment, manpower/personnel factors, physical/facilities requirement, and conducts economic analysis of costs and benefits.

g. Supervises programming and systems analysis and design activities: Plans and organizes work of programming personnel. Conducts or participates in staff meeting; develops or maintains status reports, graphs, or charts; conducts on-the-job training for programming personnel. Counsel personnel on personal or military related problems. Interprets policies, directives, procedures for subordinates. Evaluates programs or systems development.

COMPUTER SYSTEMS SUPERINTENDENT

1. SPECIALTY SUMMARY

Superintends computer systems and automatic data processing activities including systems analysis and design, programming, and equipment operations; and activities related to equipment management and monitoring functional data systems.

2. DUTIES AND RESPONSIBILITIES

a. Plans and organizes computer systems activities: Plans and schedules workloads and duty assignments; develops and improves work methods and procedures to insure full utilization of personnel and equipment; plans and supervises equipment installation; and evaluates layout of facilities. Establishes performance standards. Designs and develops organizational structures and determines personnel, equipment, and supplies required for effective operation. Maintains liaison with activities supported and supporting functional data systems activities. Drafts office instructions or computer operating procedures. Conducts or participates in staff meetings.

b. Directs computer systems activities: Directs activities responsible for data systems analysis and design, programming, and data system computer operation. Controls workflow, assigns projects to groups or individuals, establishes priorities, and maintains follow-up to assure timely completion. Directs and reviews preparation of studies, reports, and records pertaining to data system analysis, design, programming, computer operations, and equipment management. Counsels personnel on personal or military related problems, conducts orientation briefings for newly assigned personnel. Evaluates performance of individuals. Interprets policies, directives, or procedures.

c. Establishes on-the-job training for computer systems personnel: Instructs and orients subordinate personnel in local and standard procedures. Conducts and documents on-the-job training programs in data system analysis and design, programming, machine operation, and equipment management.

d. Inspects and evaluates computer systems activities: Makes periodic inspections and conducts surveys of system analysis and design, programming, and data processing activities to substantiate compliance with directives, regulations, and procedures applicable to data processing functions. Rates effectiveness of operations and prepares reports and recommendations for improved methods and procedures. Evaluates effectiveness of equipment utilization, personnel, data systems, customer service, supplies, equipment scheduling and maintenance, and acceptability of the data automation program as an instrument of management, and makes recommendations to increase its value.

e. Performs technical computer systems functions: Prepares and insures instructions and interpretations concerning reports and programs to be

derived from data processing equipment. Prepares operating schedules in detail for complete equipment system and adjusts this schedule continuously to fit availability of input data and changes in output requirements. Works on involved data system analysis and design problems. Determines the methods and computational procedures required to reduce a broad mathematical or data processing application into the detailed instructions, routines, and codes acceptable to the data processing systems. Prepares detailed flow diagrams and programming instructions from flow charts. Provides technical advice and assistance to functional activities and monitors functional data systems on continuing basis to identify changes or improvements. Analyzes requests for reports and data to be derived from punched cards, magnetic tape, etc., to ascertain sources for data needed and necessary machine operations for accomplishment of report or data.

APPENDIX C

BACKGROUND SUMMARIES FOR DAFSC GROUPS

TABLE I

ORGANIZATIONAL LEVEL AT WHICH 511XO PERSONNEL WORK
(PERCENT MEMBERS RESPONDING)

ORGANIZATIONAL LEVEL	DAFSC 51130	DAFSC 51130A	DAFSC 51130B	DAFSC 51130C	DAFSC 51150	DAFSC 51150A	DAFSC 51150B	DAFSC 51150C	DAFSC 51170
DEPARTMENT OF DEFENSE	2	-	3	10	4	1	4	4	3
HQ USAF	-	-	9	-	3	-	10	7	4
MAJCOM	38	7	52	40	36	8	56	58	35
NATO OR MAAG	-	-	-	-	-	-	-	-	-
SEPARATE OPERATING AGENCIES	4	4	-	-	12	8	7	13	12
AIR OR MISSILE DIVISION	4	2	-	10	3	-	1	6	2
TECHNICAL TRAINING CENTER	-	1	-	-	-	1	2	1	3
BASE DATA PROCESSING INSTALLATION	31	85	12	-	21	79	8	1	35
HOSPITAL, LABORATORY, OR OPERATING LOCATION	2	-	3	10	3	-	1	-	1
OTHER	13	-	21	10	10	2	10	3	5
NO REPLY	6	1	-	20	8	1	1	7	-

TABLE II

SUMMARY OF TYPE OF ACTIVITY FOR WHICH 511X0 PERSONNEL WORK
(PERCENT MEMBERS RESPONDING)

TYPE OF ACTIVITY	DAFSC 51130	DAFSC 51130A	DAFSC 51130B	DAFSC 51130C	DAFSC 51150	DAFSC 51150A	DAFSC 51150B	DAFSC 51150C	DAFSC 51170
COMMAND AND CONTROL	9	1	18	-	11	4	40	8	15
COMPTROLLER	20	30	-	-	14	48	8	4	28
DATA SYSTEMS DESIGN CENTER	-	2	-	-	3	2	2	-	4
GEODETIC SURVEY	-	-	-	-	-	-	-	-	-
INTELLIGENCE	11	-	12	40	8	1	9	48	8
RESEARCH AND DEVELOPMENT	11	-	6	10	9	1	4	1	3
SATELLITE TRACKING	16	-	3	30	24	1	2	19	7
SUPPORT ACTIVITY FOR FUNCTIONAL ACTIVITY	11	49	33	-	11	29	22	7	14
TRAINING - ATC	-	7	3	-	1	2	5	3	5
TRAINING - OTHER	-	2	-	-	-	-	-	1	-
WEATHER	11	-	-	10	10	-	-	5	1
OTHER	7	6	21	10	5	9	8	4	13
NO REPLY	4	3	14	-	4	3	-	-	2

TABLE III

COMPUTERS OPERATED BY 511X0 DAFSC GROUPS
(PERCENT MEMBERS RESPONDING)

COMPUTER	DAFSC 51130	DAFSC 51130A	DAFSC 51130B	DAFSC 51130C	DAFSC 51150	DAFSC 51150A	DAFSC 51150B	DAFSC 51150C	DAFSC 51170
BURROUGHS B 3500	29	97	3	-	22	85	1	1	40
BURROUGHS B 4700	2	2	-	-	-	7	1	-	5
CDC 160	4	-	-	-	8	-	-	-	1
CDC 3600	-	-	-	-	3	-	-	-	-
CDC 6600	2	-	-	-	4	-	-	-	1
GE 600 SERIES	-	-	-	-	1	-	5	1	1
HONEYWELL 400	-	3	-	-	-	-	-	-	-
HONEYWELL 700 SERIES	13	35	46	-	9	29	19	-	17
HONEYWELL 1800	-	-	3	-	-	-	-	-	-
HONEYWELL 6000	2	1	48	-	6	1	70	1	17
IBM 360 SERIES	-	-	3	80	5	2	1	65	10
IBM 370	-	-	-	10	1	-	1	14	2
IBM 1400 SERIES	9	-	3	10	1	1	6	1	2
NOVA 800	-	-	12	-	-	-	1	-	-
NOVA 1200	-	-	3	-	-	-	1	-	1
PDP 11/45	-	-	3	-	-	1	1	4	2
PHILCO 1000	2	-	-	-	8	-	-	-	2
PHILCO 2000	2	-	-	-	9	-	-	-	1
UNIVAC 490	4	-	-	-	2	-	-	-	1
UNIVAC 1100 SERIES	11	-	-	-	20	1	1	6	3
UNIVAC UYK-7	9	-	-	-	3	-	-	-	-

TABLE IV

ORGANIZATIONAL LEVEL AT WHICH 511X1 PERSONNEL WORK
(PERCENT MEMBERS RESPONDING)

ORGANIZATIONAL LEVEL	DAFSC 51151	DAFSC 51151A	DAFSC 51151B	DAFSC 51151C	DAFSC 51171
DEPARTMENT OF DEFENSE	3	-	1	-	2
HQ USAF	3	-	4	4	4
MAJCOM	36	42	76	68	48
NATO OR MAAG	1	-	1	-	1
SEPARATE OPERATING AGENCIES	28	26	9	11	24
AIR OR MISSILE DIVISION	-	-	-	-	2
TECHNICAL TRAINING CENTER	1	-	3	4	2
BASE DATA PROCESSING INSTALLATION	10	30	4	4	8
HOSPITAL, LABORATORY, OR OPERATING LOCATION	13	-	1	-	2
OTHER	4	1	-	7	8

TABLE V

SUMMARY OF TYPE OF ACTIVITY FOR WHICH 511X1 PERSONNEL WORK
(PERCENT MEMBERS RESPONDING)

TYPE OF ACTIVITY	DAFSC 51151	DAFSC 51151A	DAFSC 51151B	DAFSC 51151C	DAFSC 51171
COMMAND AND CONTROL	12	8	30	4	17
COMPTROLLER	7	34	13	4	16
DATA SYSTEMS DESIGN CENTER	17	18	7	7	20
GEODETIC SURVEY	-	-	-	-	-
INTELLIGENCE	9	3	13	61	12
RESEARCH AND DEVELOPMENT	20	4	1	11	4
SATELLITE TRACKING	-	1	-	-	3
SUPPORT ACTIVITY FOR FUNCTIONS ACTIVITY	20	25	23	4	14
TRAINING - ATC	1	3	3	4	3
TRAINING - OTHER	-	1	1	-	-
WEATHER	3	-	-	-	-
OTHER	9	4	9	7	10

TABLE VI

COMPUTERS PROGRAMMED BY 511X1 DAFSC GROUPS
(PERCENT MEMBERS RESPONDING)

COMPUTER	DAFSC 51151	DAFSC 51151A	DAFSC 51151B	DAFSC 51151C	DAFSC 51171
BURROUGHS 263	-	3	-	-	2
BURROUGHS B 3500	12	77	10	7	30
BURROUGHS B 4700	9	36	6	-	12
BURROUGHS 6700	7	8	-	-	3
CDC 160	3	-	-	-	1
CDC 6600	3	1	-	-	2
GE 600 SERIES	3	-	3	-	4
HONEYWELL 200	-	1	-	-	-
HONEYWELL 700 SERIES	3	7	6	-	2
HONEYWELL 6000	16	27	91	-	34
HUGHES 4118	14	-	-	-	4
IBM 360 SERIES	3	1	1	79	15
IBM 370	-	-	3	25	3
IBM 1400 SERIES	1	1	-	-	2
IBM 7000 SERIES	-	3	-	4	1
NOVA 800	-	-	1	-	1
NOVA 1200	-	-	1	-	-
PDP 11/45	1	-	3	-	3
PDP 15/20	6	-	-	-	1
RCA SPECTRA 70 SERIES	1	-	1	-	-
RCA 301	-	1	1	4	-
UNIVAC II	6	-	-	-	-
UNIVAC 490	6	-	-	-	-
UNIVAC 1100 SERIES	14	-	-	-	2